Committee on Northern Population Research

Comité de Recherche sur les Populations Nordiques

Proceedings Northern Population Workshop III

Actes du Troisième Colloque sur les Populations Nordiques

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PROCEEDINGS

NORTHERN POPULATION WORKSHOP III

ACTES DU TROISIÈME COLLOQUE

SUR LES POPULATIONS NORDIQUES

Yellowknife Inn
Yellowknife, N.W.T.

30 November to 2 December 1981 /
30 novembre au 2 décembre 1981

EDITOR / EDITION

KENNETH DE LA BARRE

PROJECT CO-ORDINATOR / COORDONNATEUR DU PROJET

DENISE HARVEY

March/Mars 1982

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* * *

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The Committee on Northern Population Research

Since its formation in 1977, the purposes of the Committee have been to:

(a) encourage northern population studies to be undertaken by universities, as well as government and other agencies;

(b) establish an informal clearing house of information pertaining to sources of northern demographic data;

(c) prepare the organization of workshops, conferences and other meetings on northern population problems to be held in the North, and to involve a large measure of direction and participation by the autochthonous people;

(d) plan and sponsor one or more longer-term research programs to be carried out, in the main, by university based researchers;

(e) submit to appropriate bodies, for their consideration, briefs or reports on matters pertaining to the collection, analysis or reporting of demographic data.

* * *

Le Comité de recherche sur les populations nordiques

Depuis sa création en 1977, le Comité s'est efforcé:

(a) d'encourager les agences gouvernementales et autres, ainsi que les universités à entreprendre des études sur les populations nordiques;

(b) d'établir un service d'information en démographie nordique;

(c) de préparer l'organisation de colloques, conférences et autres réunions portant sur divers problèmes touchant les populations nordiques; ces manifestations, tenues dans le Nord, doivent impliquer une participation active des autochtones;

(d) de planifier et parrainer un ou plusieurs programmes de recherche à plus long terme, ces programmes devant être menés principalement par des chercheurs universitaires;

(e) de soumettre pour considération aux organismes appropriés, des rapports ou des résumés ayant trait à la collecte, à l'analyse et à des compte-rendus de données démographiques.

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Membres du Comité de recherche sur les populations nordiques

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Ralph Joyce, Bureau of Statistics, Government of the Northwest Territories, Yellowknife (N.W.T.).

W.B. Kemp, Consultant at Makivik Corporation, Montreal, and Professor at Centre for Northern Studies and Research, McGill University, Montreal (Quebec) (Vice-Chairman).

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FOREWORD

The meeting in Yellowknife was part of a series of workshops organized by the Committee on Northern Population Research under a mandate established in 1977 "to organize workshops, preferably in the North", and to "find a mechanism that would facilitate greater cooperation between researchers, governments, and northern organizations". Previous workshops were organized in North Hatley (1976), Whitehorse (1977), McGill University, Montreal (1979) and Ste-Adèle, Québec (1980). Proceedings were published for the 1976 and 1979 meetings, and summaries of the other meetings appear in the 1980 Progress Report of the Committee.

As with previous workshops, the Yellowknife meeting allowed researchers to meet together - in an informal setting - to discuss their work, to test their ideas, and to report on the progress of their research.

The workshop also was an occasion to discuss the significance of demographic research with people who are working in related fields such as political science, or renewable resource developments.

Finally the workshop was an opportunity for researchers, (who in the event were largely from the south), to meet with northerners to explain the nature of research which is underway, and for them to receive some feed-back on whether the research is addressing relevant problems affecting the northern populations.

These proceedings include texts of all presentations made during the workshop with the exception of two informal presentations made by Bill Kemp and Andrew Siggner (see program schedule for topic titles). If the topics covered are of particular interest to any reader, it is suggested the individual researchers be contacted directly.

The various papers presented, and the level of discussion during the meeting, reflect both an increasing interest in northern population studies, and the sophisticated level of research underway in areas such as population projections, the relation of demography to economic analysis and forecasting, and the current interest in the political evolution of the Territories.

It is a pleasure to acknowledge, with special thanks, the contributions made by Ralph Joyce and Don Halpenny of the Northwest Territories Government for their cooperation and for the excellent and hospitable arrangements for the meeting.

By continuing to organize relatively informal meetings of this kind, the Committee on Northern Population Research hopes it may continue to play a useful role as a facilitator of useful research which will benefit the northern populations of Canada.

K. de la Barre

Kenneth de la Barre
Coordinator
Committee on Northern Population Research

March 1982

AVANT-PROPOS

La réunion tenue à Yellowknife faisait partie d'une série de colloques organisés par le Comité de recherche sur les populations nordiques, après qu'on lui eut confié, en 1977, le mandat d'"organiser des colloques dans le Nord, de préférence", et "de chercher des moyens de promouvoir une meilleure coopération entre les organismes du Nord, les chercheurs et les gouvernements". Les colloques précédents ont été organisés à North Hatley (1976), Whitehorse (1977), Montréal, à l'Université McGill (1979) et Ste-Adèle, Québec (1980).

Les actes des réunions de 1976 et 1979 ont été publiés, et de brefs comptes rendus des autres colloques figurent dans le Rapport d'Activités 1980 du Comité.

De même que pour les colloques précédents, la réunion de Yellowknife a permis aux chercheurs de se réunir - d'une manière informelle - afin de discuter de leur travail, d'échanger leurs idées et de rendre compte de l'état de leurs recherches.

Ce colloque a aussi donné l'occasion de discuter de l'importance de la recherche démographique avec des chercheurs oeuvrant dans des domaines connexes, telles les sciences politiques, ou l'exploitation des ressources renouvelables.

Enfin, cette réunion a permis aux chercheurs (qui venaient du Sud, pour la plupart) de rencontrer des gens du Nord pour leur expliquer la nature des recherches en cours et recevoir, en retour, l'avis de ces derniers sur la pertinence de ces recherches quant aux problèmes qu'ont à résoudre les populations nordiques.

Ces actes comportent le texte de toutes les communications présentées durant le colloque, à l'exception de deux d'entre elles faites par Bill Kemp et Andrew Siggner. Il est conseillé au lecteur qui s'intéresse à un thème en particulier de s'adresser directement aux chercheurs. (Consulter le programme pour connaître les sujets traités).

Les différentes communications présentées et le niveau des discussions reflètent à la fois l'intérêt croissant que suscitent les recherches sur les populations nordiques et la complexité des recherches en cours, dans des domaines tels que la projection démographique, le rapport entre la démographie et l'analyse et la prévision économiques et, enfin, l'intérêt qu'on porte actuellement à l'évolution politique des Territoires.

Il nous fait plaisir de témoigner ici notre gratitude à Messieurs Ralph Joyce et Don Halpenny, représentants du gouvernement des Territoires du Nord-Ouest, pour leur coopération efficace et la qualité de leur accueil.

En continuant à organiser des rencontres, plus ou moins informelles, de ce genre, le Comité de recherche sur les populations nordiques espère bien remplir sa tâche, qui est d'encourager la poursuite de recherches utiles aux populations nordiques du Canada.

K. de la Barre

Kenneth de la Barre
Coordonnateur
Comité de recherche sur les
populations nordiques

Mars 1982

PROGRAMME

Northern Population Workshop III / Troisième colloque sur les populations nordiques

Yellowknife, N.W.T.

30 November and 1st December 1981/
30 novembre et 1er décembre 1981

Location/Lieu: Yellowknife Inn (Gold Room)

* * *

November 30/81 / 30 novembre/81

10h30 - 12h00 : Registration / Enregistrement

13h00 - 13h15 : Welcome / Bienvenue: Ralph Joyce (Government of the Northwest Territories)

Introduction: Kenneth de la Barre

13h15 - 13h45 : Ralph Joyce (Government of the Northwest Territories)
"N.W.T. Demographic Data and some implications of Population Research".

13h45 - 14h35 : Robert Bone (University of Saskatchewan)
"Joint Project of Research - University of Saskatchewan/ Université de Montréal"
"A population study of Subarctic Saskatchewan - 1981-1983"

14h55 - 16h00 : Robert Bone (University of Saskatchewan)
"Population change in the Northwest Territories and its geopolitical consequences".

16h00 - 16h30 : Reception / Réception (Gold Room). Host/Hôte: Government of the Northwest Territories.

December 1/81 / 1er décembre/81

09h00 - 10h15 : Norbert Robitaille and/et Robert Choinière (Université de Montréal)
"Joint Project of Research / University of Saskatchewan/ Université de Montréal"
"Structure and use of the Inuit Population Register of Northern Québec"

10h45 - 11h15 : Bill Kemp (Makivik Corporation, Montreal)
"Population and renewable resources base".

11h15 - 12h00 : Ms. Frances Abele (Arctic Institute of North America)
"Population research and northern political studies".

14h00 - 15h00 : Robert Reid and/et Datta Saigaonkar (Department of Indian Affairs and Northern Development, Ottawa)
"An analytical review of population projections for the northern territories".

15h30 - 16h30 : Andrew Siggner (Research Branch, Corporate Policy, Department of Indian and Northern Affairs, Ottawa)
"An Overview of Demographic, Social and Economic Conditions among Registered Indians in Northwest Territories and Yukon".

16h30 - 17h00 : Summary / Sommaire: Kenneth de la Barre.

* * *

"NWT Demographic Data and Some Implications for Northern Population Research"

Ralph Joyce

Bureau of Statistics
Government of the Northwest Territories
Yellowknife (NWT)

A. NWT Population

As has been pointed out by Dr. Bone, Dr. Louis-Edmond Hamelin and others who have studied northern demography, what constitutes the population of the Northwest Territories is no simple matter. First, there is the distinction between the de jure population, those persons who are NWT residents, and the de facto population which also includes those persons who live in the Northwest Territories at some point, but are not residents. This distinction is complicated for the Northwest Territories by the high turnover in population resulting in a considerable population that might be considered 'temporarily resident'. In addition to the demographic issues raised by the temporary resident phenomenon, there are financial and political ramifications: in particular, questions regarding the population count on which federal financial transfers should be based and the matter of who shall be considered citizens for determining the political questions for the Northwest Territories.

The matter NWT population numbers has been further complicated by Statistics Canada's limited success in monitoring northern populations. For June 1976, Statistics Canada estimated the NWT population at 38,000, but counted 42,609 residents on Census day - a difference exceeding 4,000 persons. Problems with federal population counts for the Northwest Territories were highlighted further when Territorial government officials documented widespread underenumeration of the NWT population for the 1976 census - undercounts not only for the larger, predominantly non-native NWT communities where matters of residency complicate census counts, but also for smaller communities where it was absolutely clear that the census operation had encountered problems in accurately counting NWT residents.

A basic lack of confidence in Statistics Canada's 1976 census counts for the Northwest Territories, led to efforts by Territorial government officials to establish reliable estimates of the NWT population. Late in 1977 the NWT Bureau of Statistics was instructed by the Territorial Executive to prepare community population figures which would be used for

government purposes. The result was December 1977 Government of Northwest Territories population counts based on community lists, enumerations contracted by the government, and estimates based on occupied dwelling counts and occupancy ratios.

The December 1977 population estimates have served as the basis for subsequent year-end population estimates prepared for 1978, 1979 and 1980. The procedure used was to establish annual adjustments to community population figures based on births, deaths and estimates of net migration. Birth and death information is provided by the NWT Registrar of Vital Statistics, while estimates of migration are developed from community Family Allowance data.

In addition to estimates of basic population counts, the NWT Bureau of Statistics prepared December 1978 community level estimates for age, sex and ethnic group distribution. For this effort, the approach was synthetic, with estimates being based on 1977 ethnic group detail, 1976 Census age-sex distributions and 1971 age-sex-ethnicity cross-tabulations. This information was used as baseline data for 20-year population projections. More recently statistical cross-tabulations were developed for June 1980 based on year-end community population figures, the NWT Health Care registration file and Family Allowance statistics. This information has been used to prepare a revised set of NWT population projections.

B. Sources of NWT Demographic Data

There are various NWT demographic sources. The principal sources used by the NWT Bureau of Statistics, and potentially available for demographic research, are outline below.

1. Census of Canada

NWT Population information is available from the Census of Canada. Population information available from the 1976 census is quite limited - basically age, sex and family information. The 1981 census will provide considerably more data. In particular, the inclusion of an ethnicity item in the 1981 census, and the addition of a Metis category, greatly enhances the value of other demographic information from the Census and will provide the basis for improved population projections for the Northwest Territories.

2. NWT Health Care File

This administrative file is a potentially rich source of demographic data. Information included in the file includes address, date of birth, sex, ethnicity and date of registration in Health Care Plan. The major problem with this file is the removal of persons who have left the Northwest Territories. The coverage of many such person is cancelled due to reciprocal

arrangements whereby provincial jurisdictions share registration information; and re-registration in the Health Care Plan is necessary every two years. However, the NWT Health Care Plan consistently overreports the number of individuals resident in the Northwest Territories. Further, data on ethnicity, and the address of person receiving coverage, are of variable quality. Further there is no family relationship information on the NWT Health Care Plan registration file.

3. Family Allowance Statistics

Family Allowance files represent another case where population information is available from an administrative record system, in this case a system which supports the federal Family Allowance program. Data provided by Health and Welfare Canada provides children and families demographic detail based on postal codes for most NWT communities separately, and for combinations of communities in other cases (F-55). A new system (F-59) has been developed which will provide in addition information on the movement of children and families among NWT communities and between NWT communities and other provincial jurisdictions.

4. Vital Statistics

Data is available at the community level for births, deaths, marriages, divorces, etc. To date, this information has not been computerized making extraction of reports difficult and time consuming.

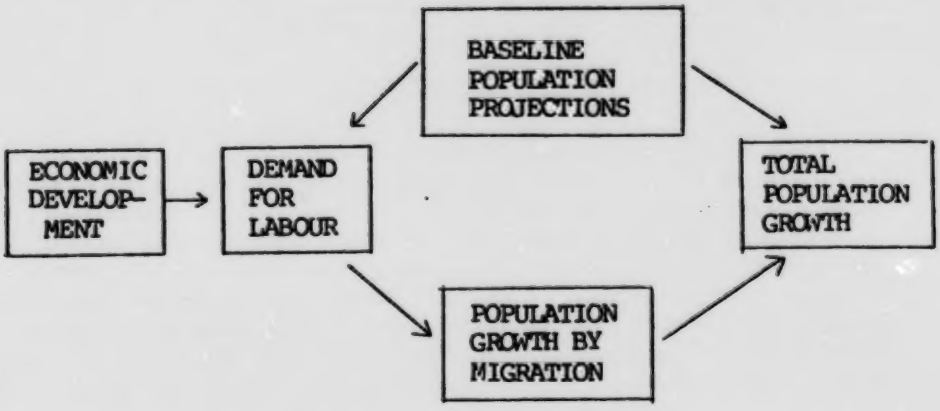
C. Population Projections

A model for NWT population projections is provided in Figure 1. Not included are delineation of multipliers, issues of job skills, etc. Nevertheless, the model outlines the basic process. Baseline population growth is that growth which will occur essentially independent of economic development. When this growth is combined with growth due to migration, total population increase is modelled. Population growth (or loss) due to migration is basically a response to the demand for labour in the Northwest Territories associated with economic development (or stagnation). Demand for labour associated with economic development is tempered in its effects on growth by migration, by the skills and employment status of persons already resident.

The Northwest Territories is on the threshold of new major economic development - development primarily associated with the extraction of non-renewable resources, particularly hydrocarbons. These developments, particularly that development planned for the Beaufort Sea, will have population

Figure 1

NWT Population Projections Model



impacts which will overwhelm growth by natural increase. Presently the NWT Bureau of Statistics is in contact with Dome Canmar, and other development companies, to establish scenarios based on company plans.

Against this backdrop, population projections recently developed by the NWT Bureau of Statistics have been oriented towards the establishment of sound, current baseline population projections. The general methodology is outlined below and preliminary results are presented in the Appendix.

Population projections developed by the Bureau of Statistics for December 1978 and June 1980 population estimates are based on similar approaches. Methodology for the 1978 projections are outlined in the report Population Projections 1978-1988 Methodological Report. Methodology for the June 1980 projections is provided below.

The June 1980 population projections are based on the cohort survival method where particular age, sex, ethnicity cohorts are exposed to varying fertility and mortality rates. The model is able to incorporate differing fertility and mortality assumptions. To date, two sets of population projections have been prepared through the year 2000:

(1) Model 1. - present fertility/mortality rates

(2) Model 2. - convergence of native fertility/mortality rates over a 40 year period.

Results for model 2 are provided in the Appendix.

In this model a special set of assumptions is made regarding the non-native population. For 1980, there were approximately 10,000 persons not of native origin who are classified as non-permanent (based on 5-year residency information from the 1976 census). For this population, the operative demographic process is replacement, not natural increase. This population is therefore not permitted to age, to die or to grow by birth.

APPENDIX

NWT POPULATION PROJECTIONS: MODEL 2

General Trends

For June 1980 the NWT population was estimated at just over 46,000 persons. With no growth due to persons moving to Northwest Territories, the NWT population will exceed 54,000 by 1990 and approach 63,000 by the year 2000 (see tables 1 and 2). There is considerable variation in regional growth patterns with the Baffin, Keewatin and Kitikmeot regions displaying rates of population increase considerably higher than those of the Fort Smith and Inuvik regions.

Table 1

NWT Population - 1980, 1990, 2000

	1980	1990	2000
Northwest Territories	46 069	54 074	62 657
Baffin	8 343	10 593	13 142
Keewatin	4 222	5 312	6 539
Kitikmeot	3 344	4 265	5 239
Inuvik	7 441	8 783	10 133
Fort Smith	22 719	25 122	27 604

Table 2

NWT Population Growth - 1980-2000

	1980-2000		1980-1990		1990-2000	
	Total	Annual %	Total	Annual %	Total	Annual %
Northwest Territories	16 588	1.5	8 005	1.6	8 583	1.5
Baffin	4 799	2.3	2 250	2.4	2 549	2.2
Keewatin	2 317	2.2	1 090	2.3	1 227	2.1
Kitikmeot	1 895	2.3	921	2.5	974	2.1
Inuvik	2 692	1.6	1 342	1.7	1 350	1.4
Fort Smith	4 885	1.0	2 403	1.0	2 482	0.9

The population projections model assumes no growth due to migration and no population growth due to natural increase among the approximately 10,000 non-permanent residents of the Northwest Territories. The Regional variations noted above therefore mirror primarily the differing growth rates among the Indian, Metis and Inuit groups. Projected population and population growth for native peoples are presented in tables 3 and 4. These projections assume a convergence of native fertility and mortality rates to those of non-natives over a 40 year period. Present rates, if continued, would result in somewhat greater population growth.

Table 3

Native Peoples Population - 1980, 1990, 2000

	1980		1990		2000	
	No.	% NWT	No.	% NWT	No.	% NWT
Native Peoples	28 731	62.4	35 977	66.8	43 810	69.8
Indian	8 504	18.5	10 140	18.9	11 900	19.3
Metis	4 500	9.8	5 366	10.0	6 297	10.2
Inuit	15 727	34.1	20 471	37.8	25 613	40.3

Table 4

Native Peoples Population Growth - 1980-2000

	1980-2000		1980-1990		1990-2000	
	Total	Annual %	Total	Annual %	Total	Annual %
Native Peoples	15 079	2.1	7 246	2.3	7 833	2.0
Indian	3 396	1.7	1 636	1.8	1 760	1.6
Metis	1 797	1.7	866	1.8	931	1.6
Inuit	9 886	2.5	4 744	2.7	5 142	2.3

Child Population

Over the next ten years, Bureau of Statistics population projections indicate only a modest growth in numbers of children (0-14 years) for the Northwest Territories concentrated in the Baffin, Inuvik and Kitikmeot Regions. The size of the school age population (5-14 years) will be even more stable. This picture changes considerably for the period 1990-2000, when growth will be three times that of the previous 10 year period. Further, this growth is concentrated among children of school age. (See table 5. Table 6 provides annual growth information).

Table 5

Numbers of Children - 1980, 1990, 2000

	0-14 Years			5-14 Years		
	1980	1990	2000	1980	1990	2000
Northwest Territories	16 180	16 717	18 282	10 545	10 613	11 878
Baffin	3 590	3 911	4 487	2 307	2 470	2 916
Keewatin	1 829	1 885	2 201	1 237	1 178	1 439
Kitikmeot	1 351	1 531	1 793	920	930	1 193
Inuvik	2 541	2 776	2 962	1 627	1 764	1 942
Fort Smith	6 868	6 614	6 839	4 453	4 272	4 388

Table 6

Annual Growth in Numbers of Children - 1980-2000

	0-14 Years				5-14 Years			
	1980-1990		1990-2000		1980-1990		1990-2000	
	(no.)	(%)	(no.)	(%)	(no.)	(%)	(no.)	(%)
Northwest Territories	54	0.3	157	0.9	7	0.1	127	1.1
Baffin	32	0.9	58	1.4	16	0.7	45	1.7
Keewatin	6	0.3	32	1.6	- 6	-0.5	26	2.0
Kitikmeot	18	1.3	26	1.6	1	0.1	26	2.5
Inuvik	24	0.9	19	0.7	14	0.8	18	1.0
Fort Smith	-25	-0.4	23	0.3	-18	-0.4	12	0.3

Working Age Population

In contrast to the trends for the NWT child population, projected growth in the working age population will be substantial over the next ten years. Further, similar (although somewhat smaller) growth will be maintained during the final decade of this century. (See tables 7 and 8). For the period 1980-1990, persons in the age group 15-64 will increase by 650 persons a year; for 1990-2000 the comparable statistics is 560 persons a year.

Table 7

Working Age Population (15-64) - 1980, 1990, 2000

	1980	1990	2000
Northwest Territories	28 478	34 976	40 576
Baffin	4 594	6 360	8 050
Keewatin	2 290	3 242	3 996
Kitikmeot	1 863	2 533	3 152
Inuvik	4 602	5 572	6 540
Fort Smith	15 130	17 269	18 837

Table 8

Annual Growth in Working Age Population (15-64) - 1980-1990, 1990-2000

	1980-1990		1990-2000	
	(no.)	(%)	(no.)	(%)
Northwest Territories	650	2.1	560	1.5
Baffin	177	3.3	169	2.4
Keewatin	95	3.5	75	2.1
Kitikmeot	67	3.1	62	2.2
Inuvik	97	1.9	97	1.6
Fort Smith	214	1.3	157	0.9

The Elderly

The number of elderly persons will increase substantially over the next twenty years. Growth is projected at 97 persons a year for 1980-1990 and 142 persons annually for 1990-2000. These statistics assume that permanent residents do not leave the Northwest Territories for retirement purposes. Such migration would be limited primarily to non-native persons resident in the Western Arctic, and reduce somewhat the forecast growth rates.

Table 9

Numbers of Elderly (65+) - 1980, 1990, 2000

	1980	1990	2000
Northwest Territories	1 411	2 381	3 799
Baffin	159	322	605
Keewatin	103	185	341
Kitikmeot	130	201	293
Inuvik	298	435	631
Fort Smith	721	1 239	1 928

Table 10

Annual Growth in Numbers of Elderly (65+) - 1980-2000

	1980-1990		1990-2000	
	(no.)	(%)	(no.)	(%)
Northwest Territories	97	5.4	142	4.8
Baffin	16	7.3	28	6.5
Keewatin	8	6.0	16	6.3
Kitikmeot	7	4.5	9	3.8
Inuvik	14	3.9	20	3.8
Fort Smith	52	5.6	69	4.5

"A Population Study of Subarctic Saskatchewan" (1)

1981-83

Robert M. Bone

Institute for Northern Studies
University of Saskatchewan, Saskatoon
Saskatchewan

1. General Objectives

The frontier of Canada has a unique demographic character and population pattern. Not only is the Canadian North the largest mass of all geographic regions, it is also the most sparsely populated. For example, the total population of the two territories, the Yukon and the Northwest Territories, consists of about half of the population of Canada's smallest province, Prince Edward Island.

The large native population and its geographic concentration constitutes another distinctive character of the population of the North. This group of peoples is associated with a different set of demographic characteristics - much higher birth and death rates than the Canadian average. These differences in these rates have led to a very high natural rate of increase for native people, rates that are similar to Third World countries.

Because of the unique demographic character and population pattern, the Canadian North requires a separate examination and analysis. The main objectives are to document the population trends and geographic adjustments; to relate these changes to a theoretical framework which will help in appreciating their social, economic and political implications; and, on the bases of this investigation, to predict future trends and spatial arrangements of populations and communities.

In my study, I have selected census division 18 in Saskatchewan as my population region. Census Division 18 is also the administrative area for the Department of Northern Saskatchewan. Like the Northwest Territories, this region is sparsely populated with the largest center, Uranium City, having a population of nearly 3,000. The total population is about 30,000 and approximately two-thirds of this population is native.

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(1) This paper describes a three-year study of the population of northern Saskatchewan. This project is part of the activities of the Committee on Northern Population Research and is sponsored by the Canadian Donner Foundation.

This three-year project is divided into three phases. Phase One focuses on data collection and assembly. Phase Two will concentrate upon an analysis of this information. Phase Three will see the production of the final reports.

The broad assumption underlying this investigation is that the population of the North is changing its demographic character and its spatial distribution in accordance with the process of modernization.

2. Phase One

The major objective of the first phase of investigation is to create a sound data base and to gain an appreciation of the strengths and weaknesses of the various data sets making up this longitudinal statistical record of population. As a result, efforts have been made to identify and collect statistical information from a variety of sources. The purposes of this broad approach to building a data base are two fold:

(a) to supplement five-year time frame of the Censuses of Canada data;

(b) to provide more information on native population and small communities.

A secondary objective was to prepare a preliminary analysis of this data in terms of determining its adequacy in establishing population trends and geographic patterns. In the process of undertaking an analysis, a general theoretical framework which would reflect the process of modernization was employed to assist in this analysis. This theoretical model is the demographic transition concept which has been adopted to a developing region. This adoption, like the fitting of this model to the Third World's population change, is able to provide an overall understanding of the first order parameters. This approximation is much like seeing a dark figure at night. You can see the general outline but not the details.

For the people of northern Saskatchewan, the time frame within which changes in the birth and death rates are to occur is much shorter than for western European countries, where the industrial revolution first took place, this is, from centuries to decades. One possible implication of the shortened period of change is less time for society to adjust to the social, economic and political changes arising from the process of modernization. For example, the society in northern Saskatchewan may see these changes take place within one generation.

Thus the pace of the modernization process may in itself generate problems which reflect themselves in the demographic statistics and geographical distribution of population.

The demographic transition identifies at least four stages in the evolution of a society from a traditional one to a modern one. In this theory, the key elements are birth and death rates and changes in these rates reflect the process of modernization. At the moment, both the Northwest Territories and northern Saskatchewan have just passed through the second stage which is characterized by a "population explosion" associated with a high birth rate and a rapidly declining death rate. The present stage calls for a sharp decline in the birth rate and, thus a more modest population increase.

3. Data Source

The eight major data sources are shown on the screen (Table 1). As well, other data sets were examined, such as electoral lists and community per capita grant lists. These sets were found lacking in reliability for producing community population figures.

4. Summer 1981 Research Activities

The 1981 summer research program saw six students undertake a series of investigations aimed primarily at data gathering. The five undergraduate students were: John Johnstone, Mary Ann McConnell, Tom Semaganis, Rosanne Tackaberry and Ann Tobin; the graduate student was Bob Mahnic.

The investigations were:

(a) collection of population labour force and vital statistics

While statistics from the census and several secondary statistical sources, such as the Saskatchewan Hospital Service Plan and Band lists, were readily available for the regional unit, these sources provide less or no information on small unorganized communities and settlements on reserves. Therefore, other secondary sources were used to provide adequate coverage for these small centers.

The first efforts were to collect such statistics on the number of people by communities and Indian reserves from a variety of sources; to assemble these data with the standard statistics on population; and to prepare a longitudinal table (1971 to 1981) for each center and the

Table 1

Properties of Various Data Sets

Data Set	Years Available	Regional-Level Data	Community-Level Data
1. Census	LIMITED 1971, 76, (81)	EXCELLENT Number, Age, Sex, Treaty Indians	WEAK
2. Published Saskatchewan Health Service Plan ("Covered" statistics series)	COMPLETE 1971 to 1979 (80 & 81)	EXCELLENT Numbers, Age, Sex, Treaty Indians	WEAK
3. INS 'runs' SHSP	LIMITED 1974, 1976, 1978, 1979 1980 and 1981	EXCELLENT Number, Age, Sex, Treaty Indians	GOOD Except for very small and unorganized communities, Data for reserves is impossible to deduce for bands with several geographically separate reserves.
4. Published Vital Statistics, Sask. Dept. of Health	COMPLETE 1971-1978 (79, 80, 81)	EXCELLENT Births, deaths, causes of deaths and mortality rates	NONE
5. Special 'runs' Vital Statistics	LIMITED 1977, 78 & 79 (80 & 81)	EXCELLENT Births and deaths by place of occurrence and residence by community	EXCELLENT
6. Housing Needs Survey	LIMITED 1976	EXCELLENT 34 Metis communities; number, age, sex, ethnic affiliation	EXCELLENT

(Cont'd). . .

Table 1 (cont'd)

Data Set	Years Available	Regional-Level Data	Community-Level Data
7. Band Lists	COMPLETE 1971 to 1977 (78-81)	GOOD two bands have reserves south of the NAD boundary	FAIR TO GOOD Individual reserves which represent a community are often difficult to identify from band lists where there are several reserves belonging to that band
8. School Enrollments	LIMITED Federal schools 1975-81; Provincial schools 1973-80	EXCELLENT Number and grades	EXCELLENT Number and grades

region. As this work proceeded it was apparent that a good check on the number of people by community was the local school population. Other data were collected on labour force and services in communities.

(b) an initial analysis

The following observations have been based on these population figures:

Table 2

Preliminary highlights of the population of Northern Saskatchewan

1. The population has increased from around 22,000 in 1971 to about 28,000 in 1980.

2. Over this time, the average rate of increase was 2.9%.

3. The band population has grown from nearly 8,000 to just over 9,500 in 1980.

4. The average rate of increase for the band population is 2.4%.

5. The proportion of the band population has declined from 35.2% in 1971 to 33.9% in 1980.

6. With the annual rate of natural increase around 2.4% and the annual rate of population increase at 2.9%, net in-migration accounts for 0.5% of this population increase, that is for 17% of the total increase.

7. Total school enrollment has increased from 1973 to 1980.

8. Reserve school population has declined by 9% since 1977. Most of this decrease can be attributed to a drop in school enrollment in the lower grades. For example, the number of students enrolled in Grade 1 dropped from 387 in 1977-78 to 262 in 1980-81, a decline of 32%. Two hypothesis seem likely:

   (a) the large annual enrollments in first year were abnormally large in the early 1970s because of the population explosion of the 1960s;

   (b) a significant number of young families are moving off the reserve.

Table 2 (Cont'd)

9. The distribution of population by communities has become more concentrated. For example, in 1971 36% of the total population was located in settlements of 1,000 inhabitants or more while in 1980, 54% of the total population was residing in these centres.

10. The rate of growth of centers indicates an uneven pattern with 1/3 of the centers having little growth or suffering from a decline, 1/3 with modest growth and 1/3 with a high growth.

11. The total number of businesses and services has increased in the centers of 1,000 plus population; no or little change was observed in those under 1,000 population.

12. In terms of the ratio of number of businesses and services to population size, reserve settlements tend to rank well below non-reserve communities.

13. From 1974 to 1981, the potential labour force jumped 11,664 to 16,102, an increase of 37.9%.

14. In 1976, the percentage of the population of Saskatchewan employed was nearly 42% while for those living in northern Metis communities the participating rate was only 20%.

15. The analysis of 1980-81 unemployment insurance claimants for northern Saskatchewan indicates a cyclical pattern with the low point occurring in September and the high point in February.

16. Male and female claimant data is strikingly different. While the male data has a pronounced seasonal pattern, the female pattern is more even, that is, a distinct pattern is not obvious in a scatter diagram.

17. Vacancies indicated by employers has a seasonal pattern with the highest numbers in the summer and the lowest in October.

Table 3

Preliminary observations on regional development and modernization

1. The economy is dominated by the public sector (primarily the Department of Northern Saskatchewan) and the mining sector (notably the three uranium mines).

2. The importance of an air commuting service to the mines from isolated native communities.

3. The hierarchical relationships between communities as reflected in:

   (a) shopping patterns by residents of small centers (lower order centers) in regional centers (higher order centers);

   (b) viability of businesses and services in the lower order centers (the potential move of these populations to larger centers);

   (c) the use of inter-community telephone calls to measure the changing levels of interaction between communities from 1972 to 1981 - a measure of the degree of "modernization" by communities.

4. The role of a primate center, Uranium City, within its hinterland, the Athabasca region

   (a) migration from smaller surrounding centers to the regional center;

   (b) the use of the business and services of the regional center by surrounding smaller centers declines with distance-cost and with the number of low order centers in the small centers.

5. The relationship of the regional center to the provincial center, Saskatoon

   (a) the use of business and services of Saskatoon by Uranium City declines with distance-cost which varies for two groups: Group I (Eldorado employees have free weekly air transportation to Saskatoon); Group II (non-Eldorado employees do not have access to this service).

"Population change in the Northwest Territories and its geopolitical consequences"

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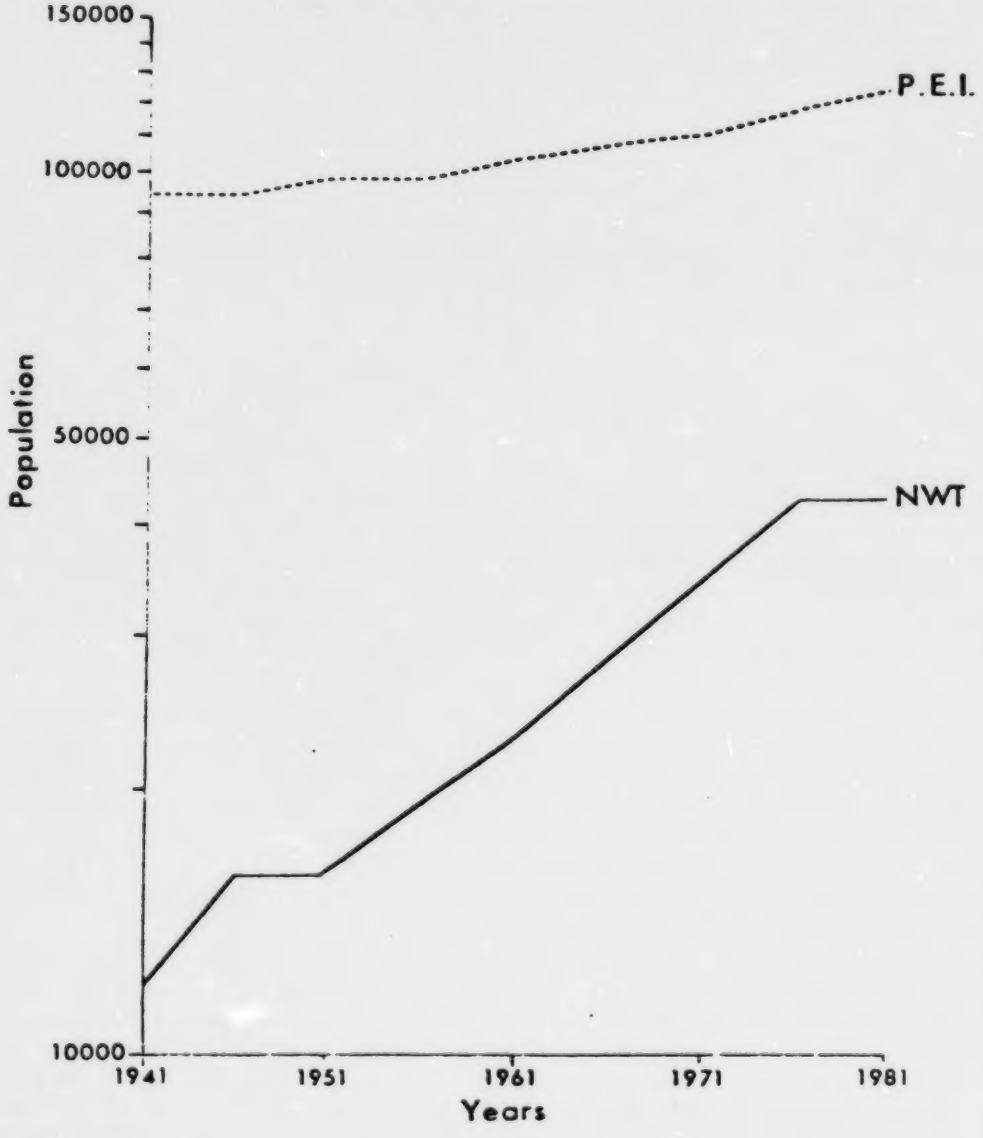
One of the critical factors determining the direction and speed of political evolution in the Canadian North is population size. With both territories seeking provincial status and some native organizations calling for independent regional governments, the strength of these cases must be evaluated in terms of numbers of people residing in these political jurisdictions.

Just last month another proposal, the so-called Public Government for the People of the North, called for two new provinces, Nunavut and Denendeh to be carved out of the Northwest Territories. This proposal has existed in different forms for several years. The new "province-like" jurisdictions would have all the powers currently held by provinces, plus some undefined additional powers to protect aboriginal rights. This proposal is based on the principle of political sovereignty for aboriginal peoples with the nation of Canada. The acceptability of this proposal is not specifically examined in this paper. Instead, my focus is on population size as a measure of a region's suitability to be a province.

While there is no magic figure associated with the granting of provincial status, the case of the two territorial governments would be greatly strengthened if they had an equivalent population to that of the smallest province. The 1976 census provides a measure of this demographic gap - the combined population of the Yukon and the Northwest Territories was nearly 63,000 or just about half of the size of Prince Edward Island which, with just under 120,000 residents, is the smallest province of Confederation.

Since Confederation, the geopolitical map of Canada has changed several times as new lands have become provinces. Most of these changes occurred in the West where, in 1905, Alberta and Saskatchewan were carved out of the Old Northwest Territories. This act and the later ceding of subarctic lands to Manitoba in 1911 left Canada West north of 60° as "territories". While it is a possibility that the federal government could

POPULATION GROWTH OF PRINCE EDWARD ISLAND AND THE NORTHWEST TERRITORIES , 1941-1981



Source: Statistics Canada

allow the same processes of province-building to create polar provinces at the current population levels, I would agree that it is much more likely to occur when the proposed new province's population is at least as large as Prince Edward Island's population.

Past Growth and Future Estimates

For nearly three decades, the population of the Northwest Territories has increased at an exceedingly rapid rate - at an average annual rate of over 4%. Since 1951, its population has nearly tripled, while Prince Edward Island's population has increased only marginally. If these demographic trends continued, eventually the Northwest Territories would have a population similar in size to the smallest province in Confederation. Adding fuel to this argument, a recent report by Professor Hamelin predicted an increase of about 14,000 new residents by 1985 and a total population of nearly 60,000.

Post 1976 Downturn

Since 1977, the Northwest Territories population has suffered a slight decline. This surprising turn of events has reversed the "older" high growth pattern of the 1960s and early 1970s. This "fast growth" pattern was based on a combination of a high rate of natural increase and a large net inflow of migrants.

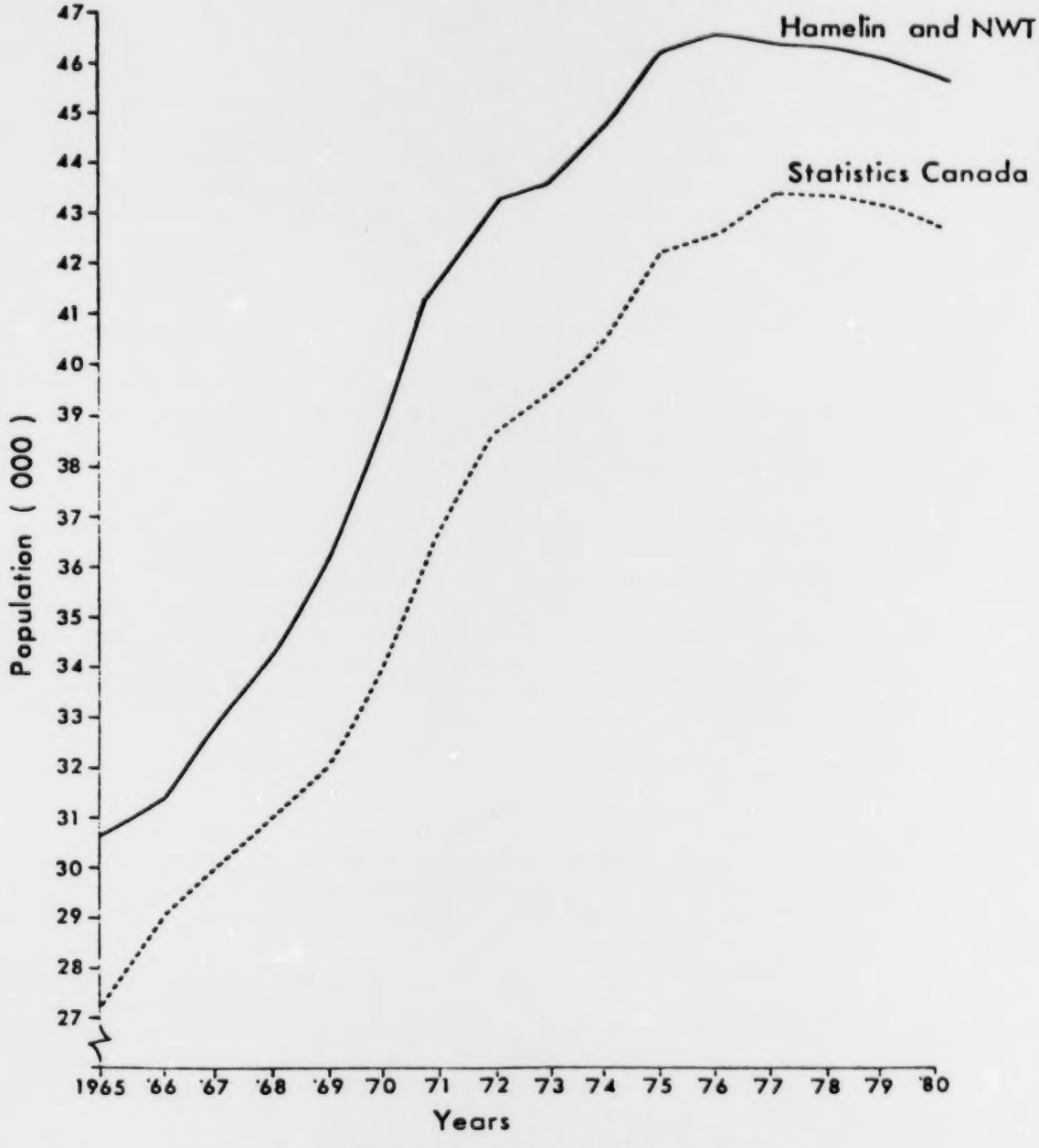
If this present zero growth rate for the Northwest Territories is not a short-term phenomenon, then such a demographic future could squash any hope for provincial status in the coming decades. To answer the question of future growth rates, the population dynamics causing this recent halt need to be examined. From 1977 to 1980, the key factor causing "zero growth" was net out-migration while a secondary one was the lowering of the rate of natural increase.

Migration

For frontier areas, the movement of people quickly responds to changes in the local economic climate. This sensitivity to employment opportunities is revealed in Figure 1.

During the major population growth period of 1968 to 1972, migration accounted for over half of the total increase. At that time, economic conditions were extremely good; the oil and gas industry was very active, the Government of the Northwest Territories was recruiting new staff, and businessmen and local governments in regional centres, such as Yellowknife and

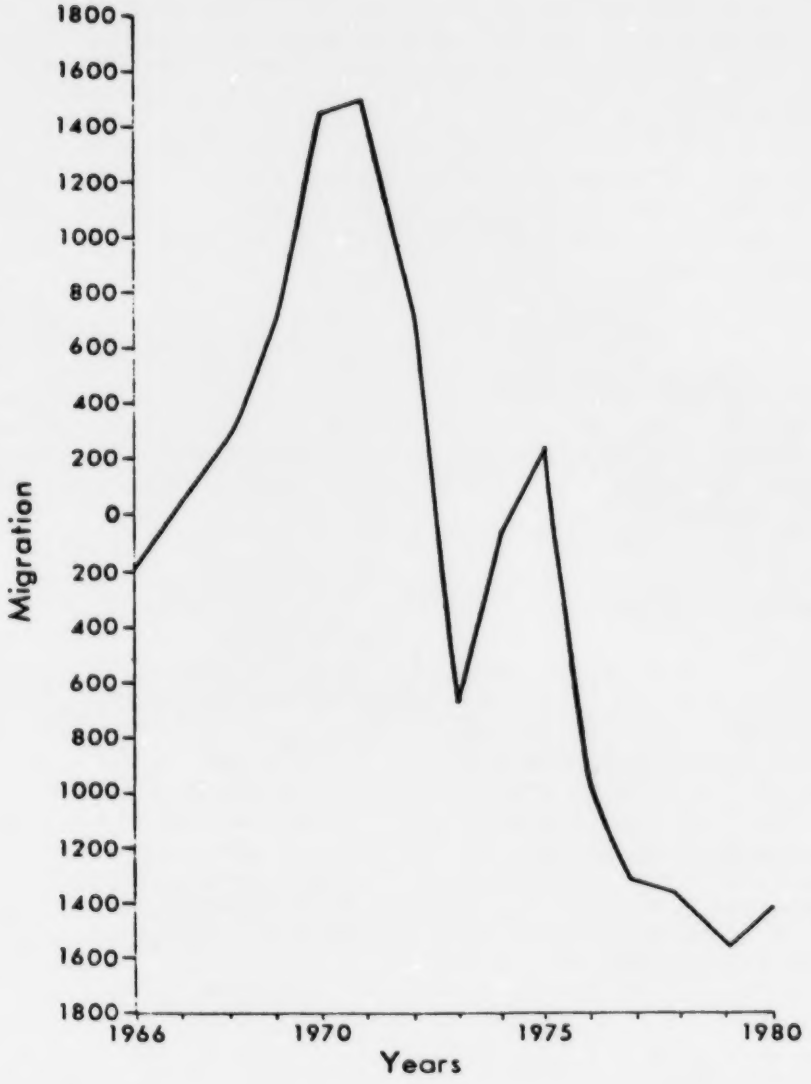
POPULATION CHANGES IN THE NORTHWEST TERRITORIES, ACCORDING TO HAMELIN AND THE NWT BUREAU OF STATISTICS, AND STATISTICS CANADA, 1965-1980.



Sources: Hamelin (1979), Bureau of Statistics, NWT, and Statistics Canada.

Figure 1

NET MIGRATION IN THE NORTHWEST TERRITORIES
1966-1980



Sources: Hamelin, 1979; NWT Bureau of Statistics, 1978-1981.

Inuvik, were expanding their staff infrastructure in anticipation of the start-up of the building of the Mackenzie Valley Gas Pipeline. With a bouyant economy, there were many new job opportunities, most of which were filled by qualified southerners.

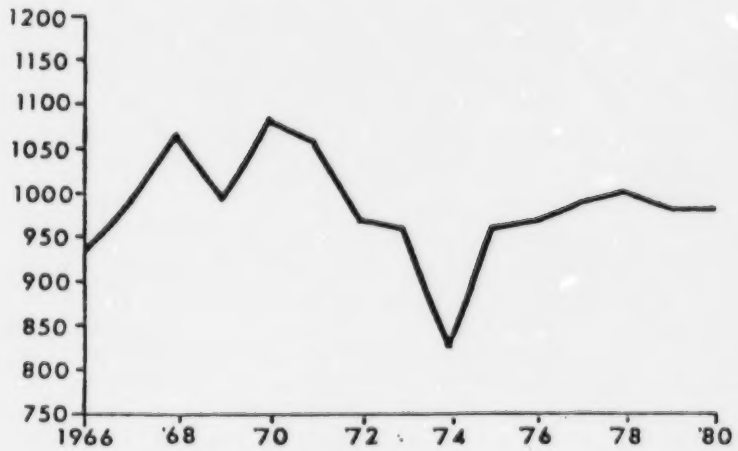
Almost overnight, this positive economic situation reversed itself. This sudden braking of the economy, referred to as the "stop-go" strategy of Hamelin, is due to the very narrow economic base of this political region of Canada. The major events affecting the Northwest Territories economy were the slowdown in the growth of the public sector, largely because most staff transfers to the Territorial Government from Ottawa were completed by 1973, and the collapse of the Mackenzie Valley Pipeline proposal which left many small companies badly overextended. Psychologically, the loss of this huge construction project which promised to create so many new jobs and businesses and which would have permanently transformed the Mackenzie Valley into a major North American transportation corridor, was a deep and telling blow to the business community in Yellowknife, and no doubt affected new investment decisions by major companies. Accordingly, many painful adjustments had to be made and some decisions resulted in men and capital moving to more attractive regions in Canada. In real terms, the population drain of the last five years just exceeded 5,000 people.

Mobility, a key factor in population growth in the Northwest Territories, has been associated with people born south the 60th parallel who have been attracted by job opportunities. A major question in the 1980s is, "Will northern native peoples become more job mobile?" Such a social development could see a movement of young people flowing from small settlements to growth centres where a variety of job opportunities are available.

Natural Increase

The rate of natural increase (the excess of births over deaths compared to the total population) peaked in the 1960s. Since then it has dropped around 3½% per year to just above 2% in the late 1970s. Most of this decline has been caused by a sharp drop in the birth rate from 3.7% in 1971 to 2.9% in 1980. This drop is likely a reflection of a change in attitude toward family size, an attitude which has already affected demographic trends in southern Canada. This pattern of vital statistics is expected to change gradually in the early 1980s with the rate of death remaining stable while the birth rate drops slightly, perhaps as low as 2.5% by the mid 1980s. Such a development would see a rate of natural increase of about 2% in 1985.

ANNUAL NATURAL INCREASE
NORTHWEST TERRITORIES
1966-1981



Sources: Hamelin, 1979; NWT Bureau of Statistics, 1978-1981.

Model

A general model for interpreting these demographic changes is the demographic transition theory. Applied to Third World countries, the introduction of a secure food supply, modern health care, and political order has brought about substantial population increase. While this theory is applied to the Northwest Territories too, its pace of change has been much quicker than in most Third World countries. In this theory, the initial stage is characterized by high but balanced birth and death rates (Northwest Territories in the pre 1940s); the second stage marks the beginning of very high birth and declining death rates (Northwest Territories in the 1950s), the third stage sees very high birth and declining death rates. The birth rate begins to decline while the death rate has stabilized at a relatively low level (Northwest Territories in the 1970s and 1980s) and the final stage is characterized by low vital rates and a zero growth rate (Northwest Territories post 1980s?). (See Figure 2).

Conclusion

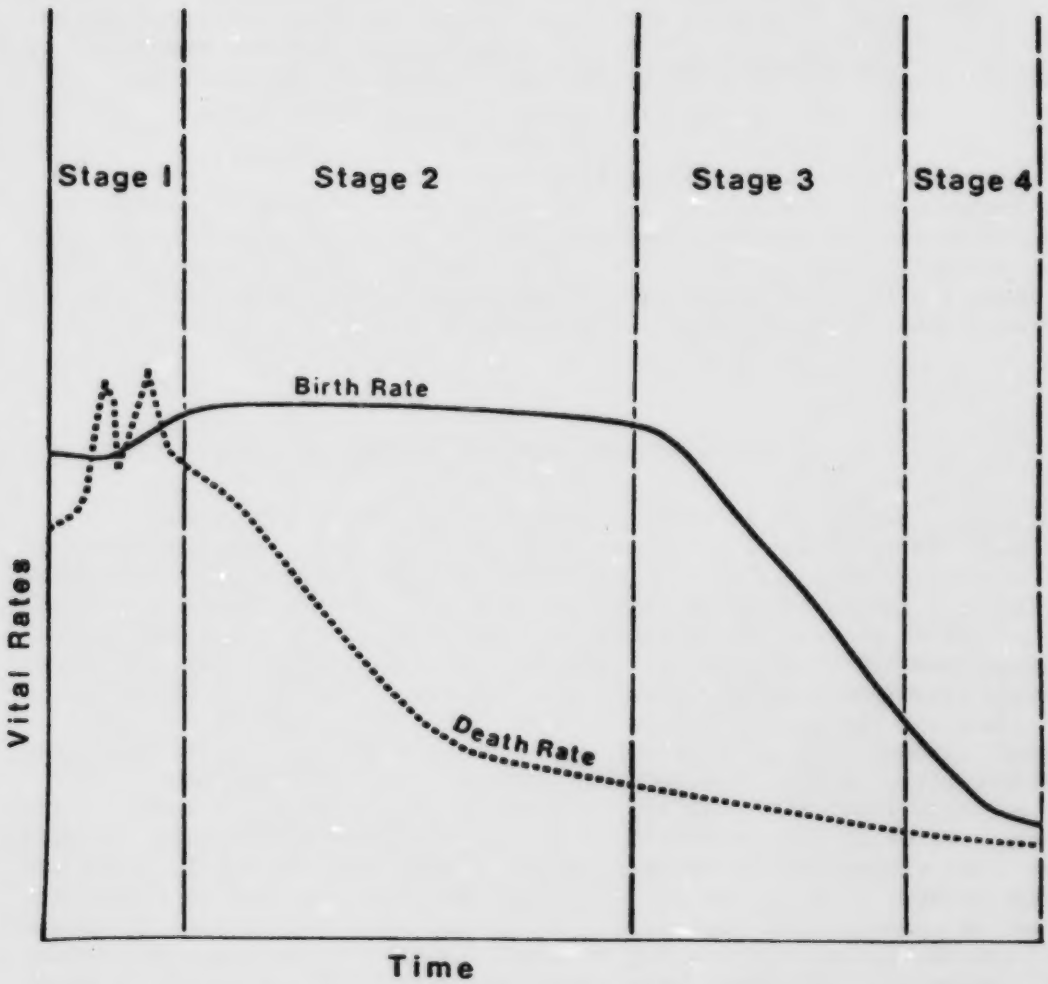
Until the early 1970s, the Northwest Territories had enjoyed a rapidly growing population. Following the collapse of the mega project proposal for the Mackenzie Gas Pipeline, out migration has been largely responsible for a zero growth rate in the late 1970s.

This zero growth rate will likely end in the early 1980s and be replaced by an annual increase of 2% or the addition of nearly 1,000 persons per year.

The validity of this conclusion hinges on two developments. Firstly, it is assumed that the rate of natural increase will continue its slow decline to 2% by 1985. Secondly, the large migration losses are expected to end. This prediction is less assured and is based on the premise that the Northwest Territories cyclic economy has reached the bottom of its downswing. Accordingly, the population outflow is anticipated to diminish quickly and, with the help of a modest economic recovery, turn into a net gain by the mid 1980s.

For a return to the higher rate of population increase associated with the early 1970s, so much depends on the vitality of the economy to generate more jobs and the key factors are the public sector and the mining industry, particularly large-scale oil and gas developments in the Beaufort Sea and the High Arctic. Such a scenario would likely see a large inflow of workers and their families and this migration would push the rate of population increase well above 2%. Such developments, while possible, seem unlikely to occur by 1985.

Figure 2



STAGES OF THE DEMOGRAPHIC TRANSITION

Translating these population projections into political forecasts is an uncertain business. However, the implications of five more years of population decline would seriously set back hopes for progress towards provincial status. With a return to a growth rate for 2% or higher, the case for provincial status, while improved, would still be some distance from serious consideration by the Federal government.

In the final analysis the population size of the Northwest Territories must be large enough to accomplish three objectives: it must be able to support the apparatus of a provincial administration, it must have a much more broadly based economy, and it should have a population close to that of the smallest province, Prince Edward Island.

"Description and use of the population register for the Inuit of Northern Québec" *

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Summary

Since 1967, researchers of the Département de démographie de l'Université de Montréal have undertaken the development of a population register, enabling the study of the demographic characteristics of the Inuit of Northern Québec. This report presents an account of the register's brief existence; illustrates an historical record of the steps taken, as well as the structure and possible application of th.s register for practical purposes.

The necessity of a population register for the Inuit

During the 1960s, the interest directed to the native population of Northern Québec, including the Inuit, arose as a result of the development of that region's natural resources, and of the need to provide the native population with the same subsidies and governmental services (social welfare, various pensions, education) as was granted to the remaining Québec population. But in order to apply the different governmental programs, it was necessary to determine certain demographic characteristics of the population, such as age, marital status and the number of dependent children. With regards to the Inuit of Northern Québec, there existed three sources of information: the Canadian census, vital statistics, and the administrative lists representing the different inuit villages. However, these three sources, taken individually, proved to be inadequate for the study of the demographic characteristics of that population. From one census to the next, studies concerning the evolution of generations showed an incorrect enumeration of the Inuit's age (for example, in the absence of migration, the total number of persons in a generation was shown as increasing throughout the years, when logically, a decrease should have occurred as a result of mortality.) (Normandeau, 1976; Normandeau et Légaré, 1979). In fact, even today, the census is not very reliable to understand the basic demographic characteristics of the Inuit, as many

* The territory covered by the register is the administrative region of Nouveau-Québec which we translate by Northern Québec.

of them do not know their age, their place of birth, nor the number of children they have. On the other hand, before 1975, the administrative lists were not of any help, as they were strictly for administrative purposes. From one list to the next, the death counts were deducted and the births were added without verifying the data already gathered (Bernèche and Normandeau, 1981). As the quality and the regularity of the lists varied from one village to the other, it was impossible at one point to detect the real situation in all the Inuit villages. Finally, with regards to the vital statistics, since 1952, the Dominion Bureau of Statistics no longer published data according to ethnic origin. Certain provincial governments, having ceased to ask that particular characteristic on the vital registration forms, it was no longer possible to know the total number of the births and deaths of the Inuit. Consequently, even if this total number was known for the province of Québec, (Québec having kept the question regarding ethnic origin on its forms until 1975), the age structure of the deceased and the age structure of the mothers with regards to births would still remain unknown.

These few facts led Jacques Légaré of the Département de démographie de l'Université de Montréal, to create a population register with the aim of accurately establishing the demographic characteristics of the Inuit of Northern Québec (Légaré, 1971).

The structure of the register

The basic philosophy of the register consisted of retaining information originating only from official sources, in other words, vital certificate registrations. The information was more valid than data gathered in censuses, since the calculation of an Inuk's age, which is done from birth registration forms, is more precise than the age declared by the individual himself or by a relative. Thus from the beginning, it was foreseen that the register would be integrated with the vital registration certificates. Jacques Légaré of the Département de démographie therefore benefited from an agreement with the Québec Department of Social Affairs, permitting him to receive photocopies of all certificates regarding the Inuit of Québec. In return, he agreed (in order to respect the confidentiality of the data), not to issue personal and individual information concerning the Inuit. The first birth certificate received dates back to 1926 and the first death certificate to 1941. Very few marriage certificates were received, since most of the time, the unions were not registered.

Within the register, a form was established for all Inuit having a birth or a death certificate, for the individual's parents declared in both certificates, for the spouse mentioned in the death certificate and finally, for all persons appearing in a marriage certificate. The format

of the Inuit register was based on the Dutch register. Information concerning seven characteristics are dealt with on the front cover of each individual form (Légaré, 1967), i.e.:

1) Identification of the individual: - disc number and name;

2) Birth: - date and place of birth;
   - parents' place of residence at the moment of birth;
   - identification of the parents: disc number, date, place of birth, ethnic origin. Are they deceased? Were they married at the time of the child's birth?

3) Death: - date, place and cause of death;

4) Adoption: - place and date of adoption;
   - identification of the adoptive parents (same information as for the natural parents);

5) Marriage: - place, date and type of marriage;
   - identification of the spouse: place and date of birth, name and disc number;
   - separation if it occurs: cause, date and place of disunion;

6) Occupation: - name of the different occupations, as well as the date of the transfer;

7) Location of residence: - enumeration of the different residences, as well as the date of the move.

The sex of the individual is identified by the color of the form. The green forms are assigned to the Inuit males; yellow ones are given to female Inuit.

The back of the form is assigned to the children of the individual i.e. information regarding the name and the disc number of each child, the place and date of birth, the sex, the date and manner of his/her departure from the family setting. It is important to note that certain characteristics were determined in an indirect way. Thus, a change of address

or occupation is assumed if on a more recent certificate, a place of residence or an occupation differed from the previous one. We also considered two persons as being married if such is their declaration on a birth registration form.

In the register, the forms are not filed in alphabetical order according to name, but rather by disc number, because for the Inuit, the name often does not seem to represent a permanent characteristic. Further, the name spelling can easily change, thus making it unrecognizable. As far as the magnetic tapes are concerned, following the computerization of the register's data, only the disc number is available to identify the individual. The disc number[1] is attributed to the Inuk at birth and is maintained by the same individual until his/her death. The disc numbers are divided into twelve categories representing different regions in Canada. The series E1 to E7 and W1 to W3 are located in the Northwest Territories, whereas the series E8 and E9 represent the Northern Québec Inuit, as well as those of the Belcher and Killiniq islands. Incidentally, these two islands are usually part of the Northwest Territories. With regards to the Inuit of the other regions in Canada, we know nothing about the attribution of disc numbers.

Theoretically, the register therefore created from the vital certificates, should permit the carrying out of extensive demographic studies on the Northern Québec Inuit. The reality is unfortunately otherwise, as the vital statistics registration of the Inuit population, is incomplete. Thus, Louise Normandeau and Jacques Légaré (Normandeau, 1976, 1976a; Légaré et Normandeau, 1979), demonstrated that from birth records found on the administration lists, the under-registration of births according to vital statistics could reach as high as 50% (Normandeau, 1976). Even if it is impossible to execute the same research for deaths, we can easily conclude that the under-registration of deaths is, at least, equal to that of the births. Therefore, the vital registration forms themselves do not represent a sufficient basis for the completion of the Inuit register. We will see later on how we attempted to alleviate this deficiency.

In 1975, with the substitution of the question regarding the ethnic origin for that of the mother tongue on the Québec vital registration forms, it became more difficult to determine the population aimed at by the register. Since then, various criteria have had to be used to determine the relationship between people of Inuit origin, and those individuals appearing on vital registration acts. The criterias are: the mother tongue, the place of residence, the name and the presence of a disc number. In the past, the disc number appeared on all certificates concerning the Inuit, whereas now, in many cases, it is omitted. Therefore, the disc number cannot be used as the only criteria to determine the Inuit origin.

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(1) For further information, see Roberts (1975).

In 1975, the James Bay and Northern Québec Agreement between the Northern Québec native population and the Québec government, provided a second source of information for the Inuit register. This source consisted of a list of Inuit beneficiaries under the Agreement. Following this Agreement, the Cree Indians and the Inuit handed over their rights and titles of their land, in return for a financial compensation of 225 million dollars. Of that amount, 95 millions went to the Inuit, along with certain titles for fishing and hunting rights. In order to determine the number of persons eligible for the above mentioned compensations, an Enrolment Commission was set up to keep a record of all Cree and Inuit beneficiaries of the Agreement. On July 1st 1977, as a result of the Commission's study, a list of Inuit beneficiaries was issued, grouping them according to their respective villages. For the Inuit, the rules of eligibility to the benefits mentioned in the James Bay Agreement, were the following (Lachance-Brulotte, 1976):

> On November 15, 1974: to be of Inuit lineage, to be born or be presently residing in Québec, or to be recognized as a member of one of the Inuit communities.
>
> As of November 16, 1974: to be a legitimate, illegitimate, or adoptive child, by either maternal or paternal affiliation, with the persons recognized eligible by the above mentioned point. To be the spouse, no matter the ethnic origin, of the persons eligible on November 15, 1974.

The information contained on the Commission's list is not as precise as the one originating from the vital registration forms. Nevertheless, it can be considered as valid, as it is verified by a local Enrolment Committee composed of three people and one Appeal Commission. The list does not provide data as detailed as those contained in the vital certificates, but it has the advantage of presenting for the first time, and at a precise moment, information on an individual basis, for the population of all Inuit villages of Northern Québec. Furthermore, the list contained information on the Inuit living in the Northwest Territories eligible for the benefits mentioned in the Agreement. This permits an elimination of these individuals from the registration, since they have emigrated outside Northern Québec. The following is the information contained on the list which is also useful for the register: the name, disc number, date of birth, place of residence and family status. As individuals are grouped by family, it is possible to determine the parents of children located for the first time and also to establish marital bonds. When information, regarding the same characteristics, differs between the list and the vital certificates, the latter source has priority over the former in the register.

Finally, it was decided to refer to another source in order to complete the register's coverage of the Inuit population. This source included various administrative records, and one nominative list which supplies a date of birth for most of the disc numbers corresponding to the series E8 and E9 issued before 1970, as well as a few dates regarding deaths. Because the administrative lists were not established in a precise manner, their only use resulted in the opening of new files for individuals not yet detected by vital certificates and the Commission's list, and to assign them a date of birth and a place of residence. Apart from having been used to open new files, the nominative list also served to attribute, in certain cases, date of birth and sometimes deaths, to individuals previously located, whose date of birth or death was unknown. Therefore, the lists only played a minor role in the establishment of the register.

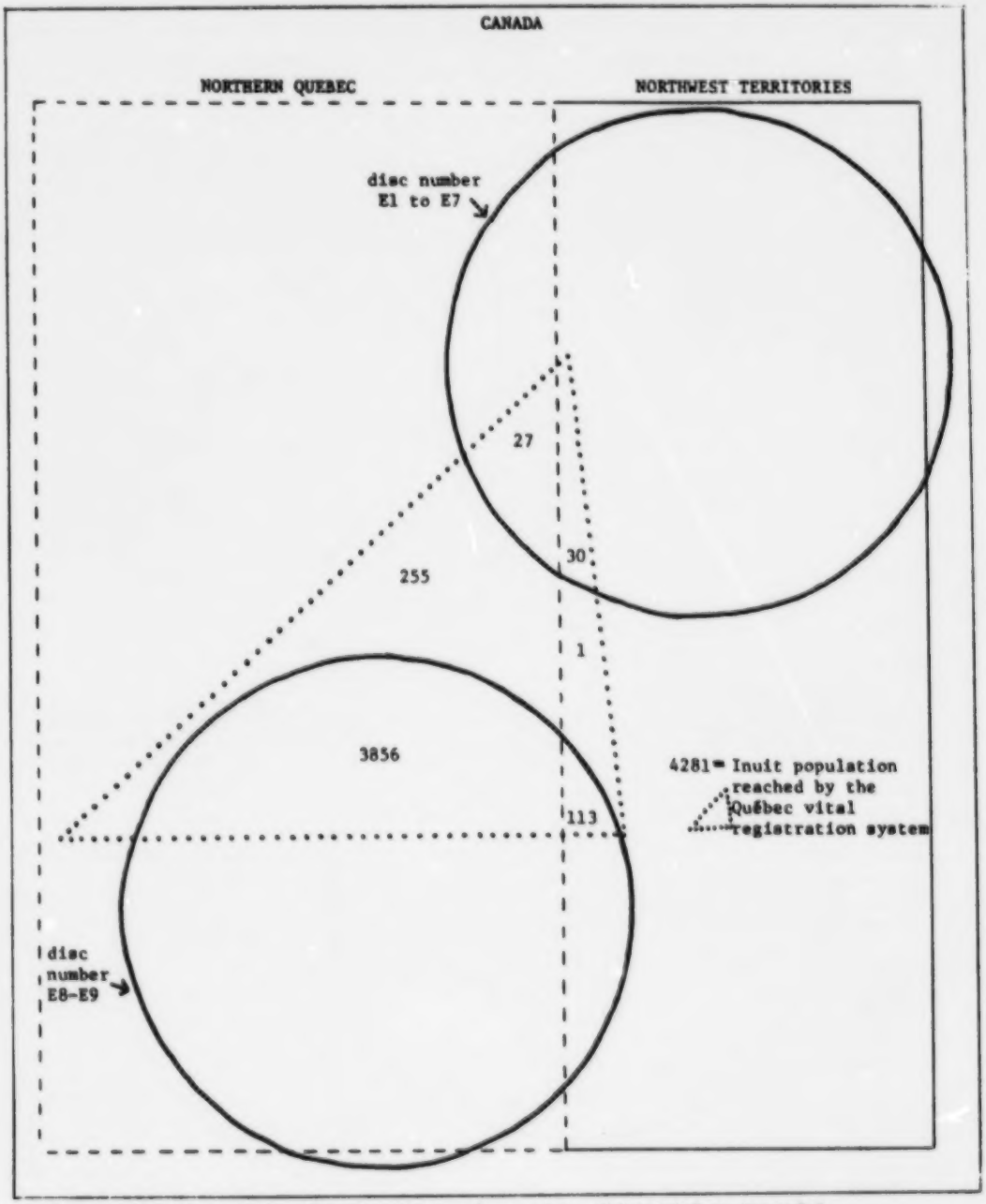
With the illustrations that follow, it will be possible to show the part played by the three sources in the structure of the register. Each illustration represents a portion of the Inuit population, covered by the register, living and residing in Northern Québec on July 1st 1977. The data supplied for the Northwest Territories, concerns individuals detected by the vital statistics or by the Commission's list, but who are not part of the register, as it is limited to Northern Québec.

Figure 1 represents those Inuit alive on July 1st 1977, and appearing on a Québec vital certificate. The place of residence on this date is determined by the address known according to all three sources. Out of 4282 individuals joined, the register includes 4138 representing all those then residing in Northern Québec. Among the 4138 individuals, close to 93% of them have a disc number corresponding to the series E8 or E9, which means that they were born in Northern Québec or in the adjoining islands. The remaining 27 individuals who have a number beginning with the series E1 to E7 and residing in Northern Québec, are immigrants, whereas the 113 Inuit possessing a number of the E8 or E9 series and residing in the Northwest Territories, are either emigrants or residents of the Belcher and Killiniq islands.

In Figure 2, we find the complete data taken from the Commission's list. Thus, on the first of July 1977, there were 4523 Inuit residing in Northern Québec who had enrolled. Consequently, all these individuals are included in the register. Among these 4523 individuals, close to 97% have a disc number corresponding to the series E8 and E9. The list includes also 305 Inuit residing in the Northwest Territories, as well as 81 individuals who migrated from the Northwest Territories to Northern Québec.

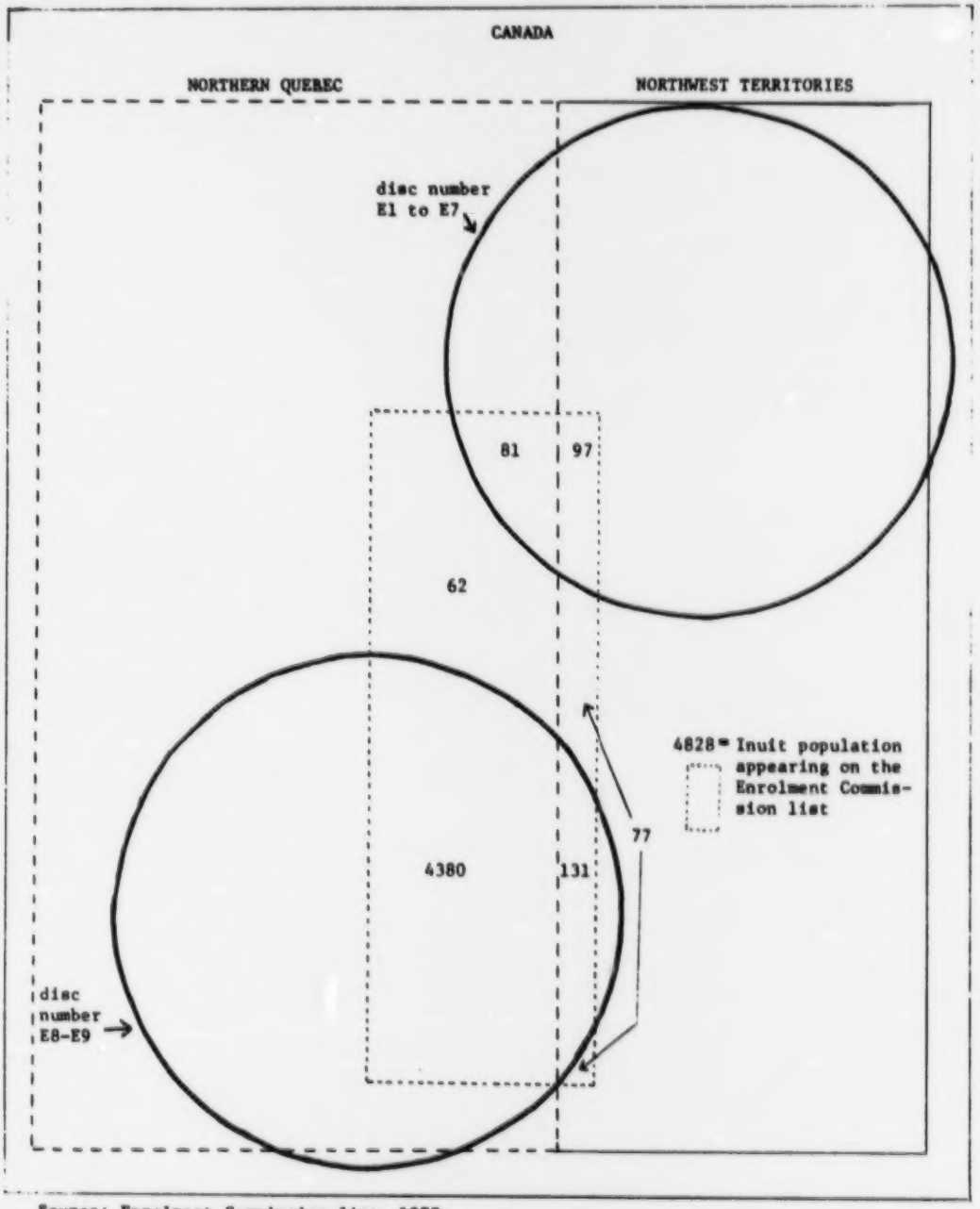
Figure 3 allows us to see the entire structure of the register on the first of July 1977, as well as the individual contribution of each of the three sources. Consequently, the use of the information supplied

Fig. 1: Inuit population registered by the vital registration according to disc number and place of residence; Northern Québec, July 1st, 1977.



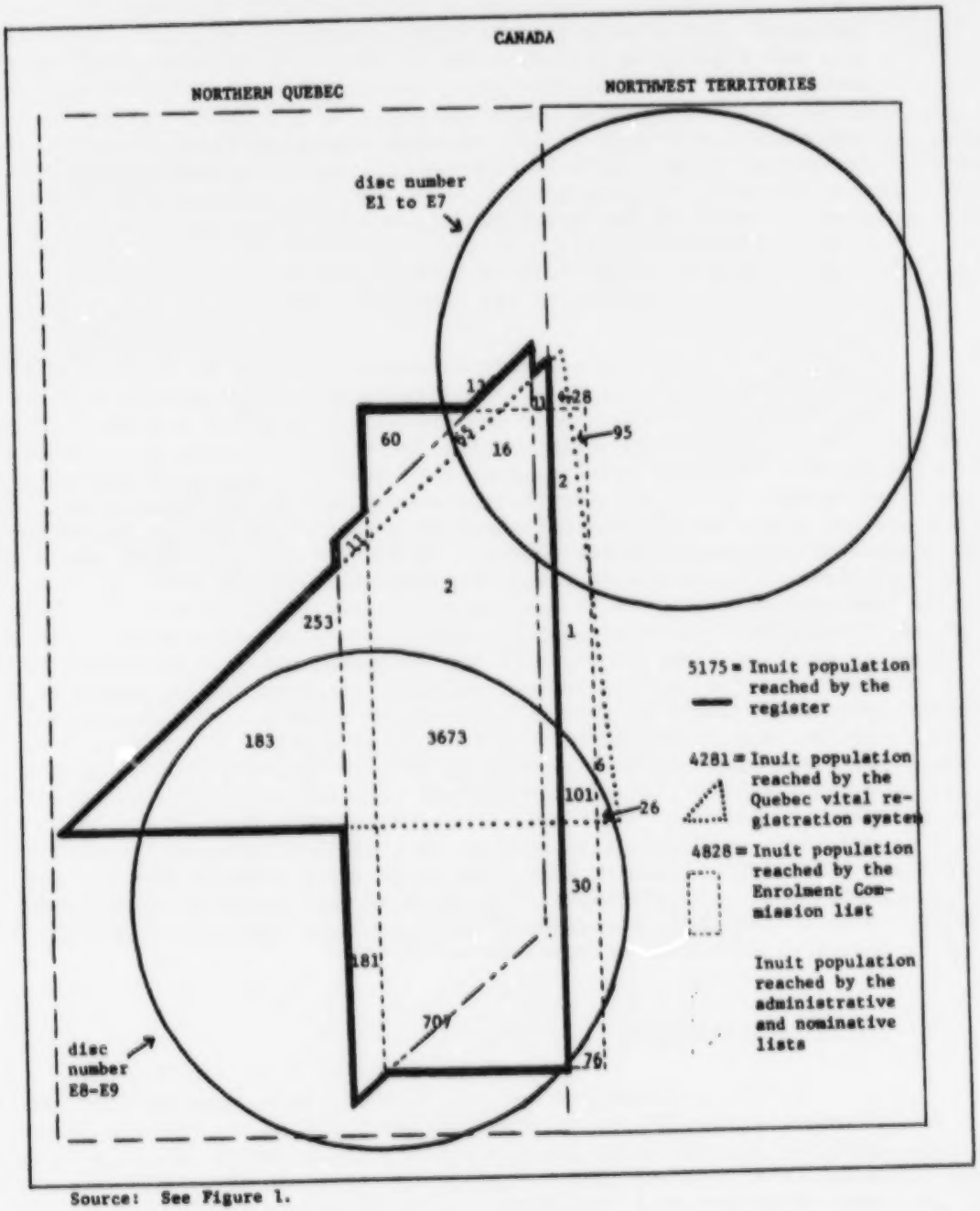
Source: Inuit register, Département de démographie, Université de Montréal.

Fig. 2: Inuit population of the Enrolment Commission list according to disc number and place of residence, Northern Québec, July 1st, 1977.



Source: Enrolment Commission list, 1977.

Fig. 3: Inuit population of the register, according to information source, disc number and place of residence, Northern Québec, July 1st 1977.



Source: See Figure 1.

by the Commission's list, added 832 more individuals to the initial register created from only the vital certificates. Furthermore, the administrative and nominative lists contributed 205 more people. The living and residing population on July 1st 1977, included in the register, increased successively from 4138 individuals to 4970 with the Commission's list and finally to 5175 persons, of whom 105, at least, are immigrants. Among the 5175 persons covered by the register, 3673 or 71% of them are found on both the vital certificate and on the Commission's list. The information contained in the register regarding these 3673 individuals is very detailed, since it originates from two official and complementary sources. This is not the case for the remaining 1502 individuals whose information derives from only one official source (vital registration or Commission's list) or the administrative lists. The administrative lists have served only as a means of providing information on the individuals not covered by the other two sources.

Although the register determines a total of 5175 Inuit residing in Northern Québec on July 1st 1977, we should not immediately conclude that this figure represents the actual population. The total obtained from the Commission's list, which represents 4523, is much closer to the reality. In fact, the register has two vices which are linked to the coverage of deaths. The first one concerns the individuals that appeared on a vital certificate and who died before 1941, before the introduction of the death certificates among the Inuit. As these individuals do not possess a death certificate, they cannot leave the register, and are therefore considered "alive" by the latter. The second represents the under-registration of deaths. While it was possible to find the majority of non-registered births with the various lists, the operation is impossible for the non-registered deaths. Consequently, the register's living population increases year after year more rapidly than the actual population, due to the under-registration of deaths. The two gaps explain the difference in the total (which is 652) between the register and the Commission's list. We could eliminate a portion of these individuals, and while considering their date of birth, suppose that at a certain age they should be dead. Similarly, when an individual remains absent from consecutive lists of the previous years, we could consider him/her dead or emigrated. The administrative lists of the past five years, which are much better than the old ones, along with the Commission's list, seem to be especially reflective of this operation.

Use of the register

The register has not yet reached its maximum utility, since the computerization of the information contained in the records is not completed. Consequently, for the moment, measurements can only be made by manual compilation. Here are a few examples of the register's present use. From the data regarding births and deaths supplied by the register, on the one hand, and the Canadian census and the population estimated by

the register situated between two censuses on the other hand, it has been possible to measure the evolution of fertility, mortality, and the increase of the Inuit population during the last decades. The mortality data will have to be interpreted with a lot of caution, following the under-registration of deaths.

We should be conscious that the image of the population contained in the register continued to evolve as a reflection of new information compiled. The image of the population given by the register is therefore a function of its state at a given point in time. The results of analysis presented below reflects the state of the register as of July 1st 1977.

The crude birthrate

There are many indices used to measure fertility. The crude birthrate is the simplest but also the least precise, since it does not take into consideration the age structure of the population. The rate is defined as being the ratio of the annual average number of births having been observed during a given period, over the total population in the middle of that period. In Figure 4, we notice the two peaks reached by the Inuit crude birthrate in 1931 and 1961. Since this last date, the rate has decreased constantly. When we compare the birthrate of the Inuit population to the one for the whole province, we see that both have the same pattern, with the former remaining entirely higher. The decrease in natality seems to have begun later among the Inuit. Even though the birthrate of the two populations follow the same trend, it is not possible to associate the same explanations to the two populations with regards to the variation of the birthrate, as the life-styles are so different. For the Inuit, the curve can at the same time be influenced by the quality of the registration and the variations of the birthrate, even if we attempted to eliminate the under-registration of births. The constant increase observed between 1941 and 1961, can be explained by an improvement in the standard of living (decrease in stillbirths and miscarriages) and by improvements in registration procedures, whereas the decrease during the 1960s coincide perhaps with a general desire to reduce the number of births. For the last years, we also cannot totally exclude a deterioration in the recording of events.

The general fertility rate

The general fertility rate has the advantage, in comparison to the crude birthrate, not to be influenced by the age structure of the population, as it compares the number of observed births to the total female population of childbearing age. Figure 5 illustrates an evolution similar to the one observed for the crude birthrate. The Inuit population therefore

possesses a much higher fertility rate than the whole Québec. However, since the 1960s, the Inuit have experienced a decline in fertility as a response to increasing incentives for fertility control.

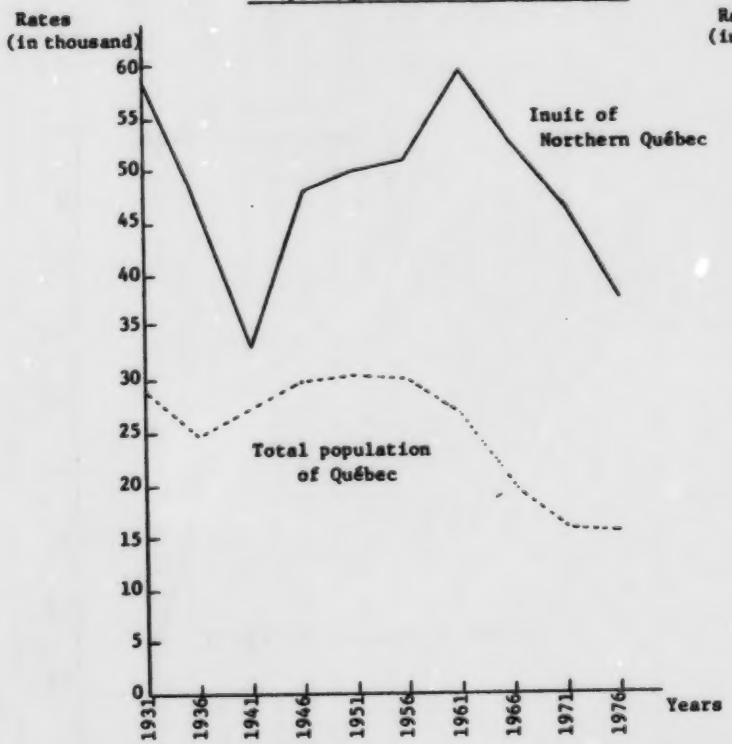
The crude deathrate

Certain measures used in order to estimate the deathrate of a population, can result in various errors of interpretation. Thus, the crude deathrate, which is the annual average number of deaths during a given period of time for the total population in the middle of that period, depends on both the age structure and the general health conditions of the population studied. In Figure 6, the Inuit crude deathrate never ceases to decrease during the entire period studied, going from 37% to 5%, whereat it becomes inferior to the Québec average. Nevertheless, the rates of the two populations are not comparable, since the Inuit have both a younger age structure, and an under-registration of deaths which are, on balance, more important.

The infant mortality rate

The infant mortality rate permits us to better illustrate the Inuit situation in comparison to the Québec average. Indeed, this rate, which represents the number of children's deaths of less than one year, during a given period of time, divided by the number of births during the same period, is not affected by the age structure of the population. As a result, this constitutes an excellent indicator of the social, economic and health conditions of a population. Figure 7 presents a slight increase of the rate during the 1950s, followed by an important drop until 1971, and finally a stabilization since that time. The comparison with the Québec average indicates a higher mortality rate among the Inuit, even though the gap seems to decrease during the last decades. Although the increase of the infant mortality rate during the 1950s seems to be explainable only by a better coverage of vital registration deaths, the decrease of the subsequent decades undoubtedly reflects a real improvement of the social and health conditions among the Inuit. However, the real infant mortality rate of the Inuit, considering the under-registration of vital deaths, should be situated at a much higher level. This point has been demonstrated by Louise Normandeau and Jacques Légaré (Normandeau and Légaré, 1979; Légaré, 1981) with the help of a method that permits the evaluation of the number of infantile deaths that have escaped the vital statistics registration. The rates therefore obtained are much higher, but still show a constant drop during the entire period, whereas the increase observed during the 1950s, is now a decrease following this correction. The stabilization of infant mortality rate between 1971 and 1976 does not necessarily reflect the amelioration of social and health conditions of the Inuit. The stabilization could depend as much on variations in the quality of registration of Inuit vital statistics as a momentary pause in the decrease of the infant mortality.

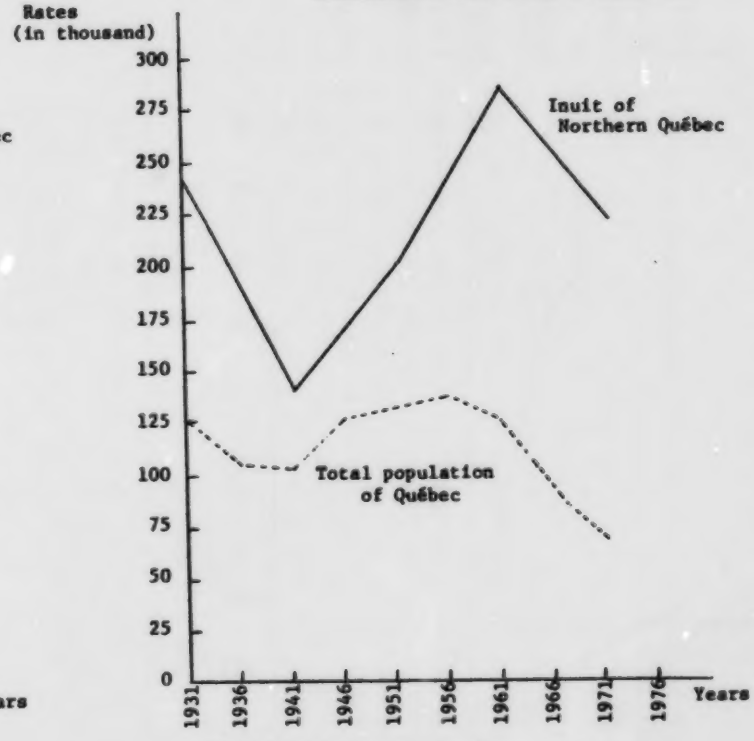
Fig. 4: Crude birth rates for the Inuit of Northern Québec and total population of Québec, 1930-1932 to 1975-1977.



Sources: Inuit: Table 2

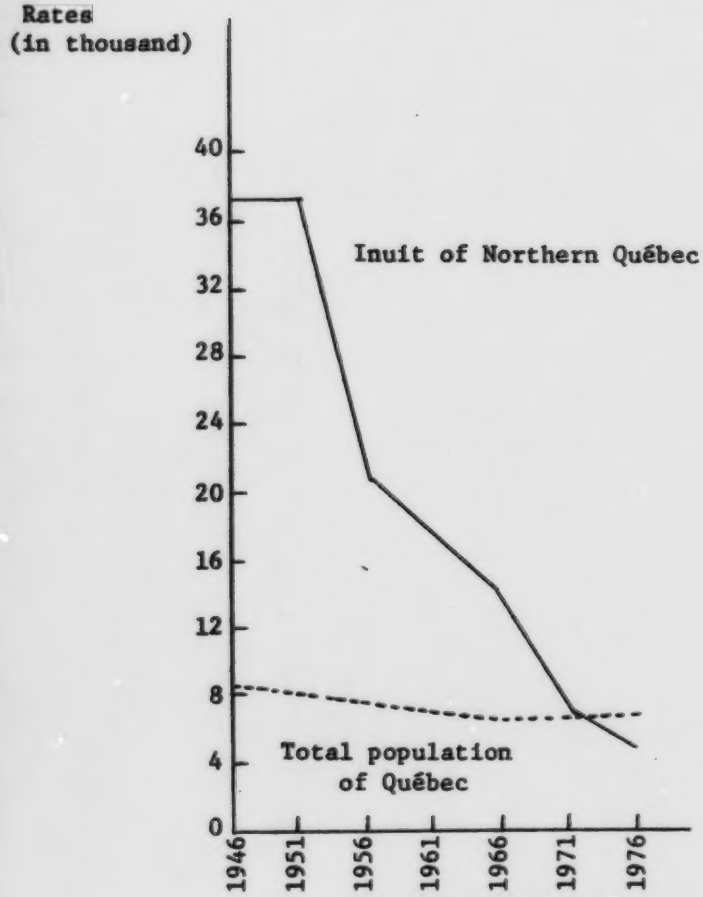
Total population: DOMINION BUREAU OF STATISTICS,
Vital statistics.
Census of Canada.

Fig. 5: General fertility rates for the Inuit of Northern Québec and total population of Québec, 1930-1932 to 1970-1972.



Sources: See Figure 4.

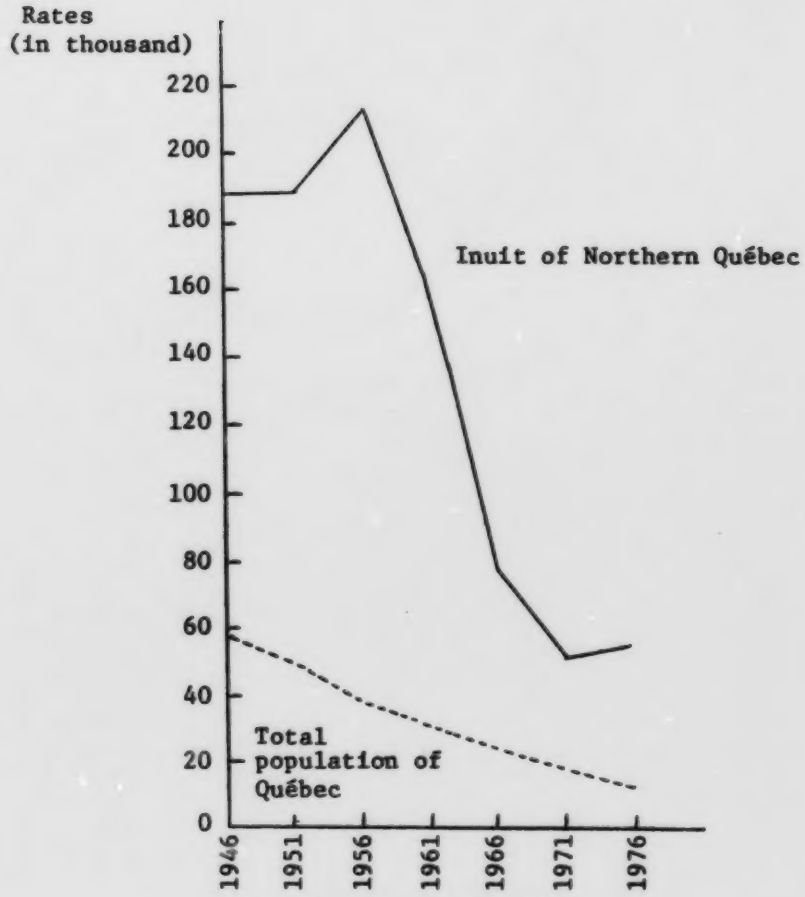
Fig. 6: Crude death rates for the Inuit of Northern Québec and total population of Québec, 1945-1947 to 1975-1977.



Sources: Inuit: Table 3.

Total population: DOMINION BUREAU OF STATISTICS,
Vital Statistics,
Census of Canada.

Fig. 7: Infant mortality rates for the Inuit of Northern Québec and total population of Québec, 1945-1947 to 1975-1977.



Sources: See Figure 7.

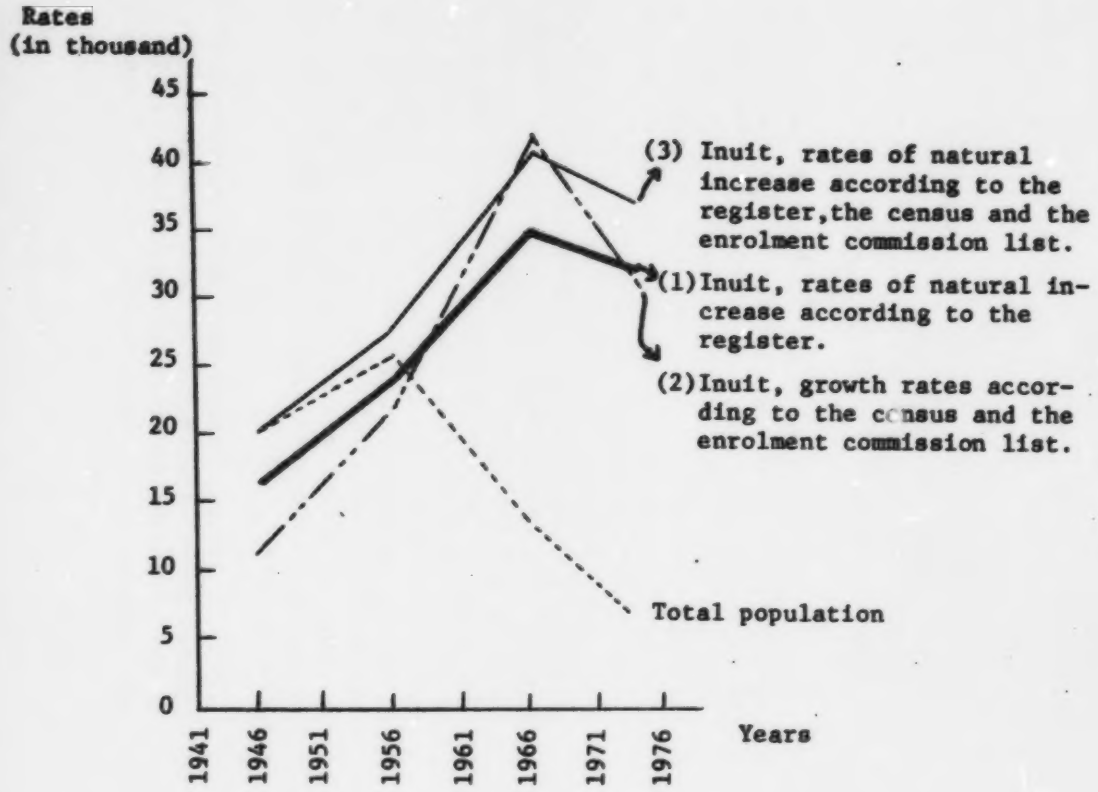
The growth rate

From the difference between the number of births and deaths of a population, we can obtain the natural increase of that same population. When this population is not affected by migration, the natural increase becomes the total growth. In the case of the Inuit, if we assume that migration plays a negligible role in the growth of the population, it is possible to estimate the total growth of the population included in the register, by only taking into consideration the births and deaths. But in order to obtain a comparable measure over time, the growth rate, (which brings the average annual population growth during a given period to the population observed or estimated in the middle of the same period), will be used. Figure 8 presents the evolution of annual average growth rate in the Inuit population taking into account: 1) the natural growth and the population estimated by the register; 2) the total growth resulting from the numbers provided by the census and the 1977 list; and 3) the natural growth from the register and the numbers provided by the census and the 1977 list. We notice the similarity in the evolution of the growths, but also detect a gap with regards to the intensity of growth. The difference between the rate of curves (1) and (3) is found uniquely at the level of population numbers considered, whereas the numbers estimated by the register are higher than those provided by the census and the 1977 list. We have shown previously that the register had two flaws related to the coverage of deaths, with a tendency of showing population numbers higher than reality.

On the other hand, the variations between curves (2) and (3) are a reflection of the differences between natural growth obtained from the register and total growth drawn from the censuses and the 1977 list, and these are explained by the under-registration of births and deaths included in the register. When the under-registration of births is stronger than deaths, the natural growth estimated by the register is lower than reality. It becomes higher when it is the deaths that have a stronger under-registration. As the under-registration of deaths is probably stronger than the under-registration of births, the natural growth found in the graph has a higher level than that obtained from the censuses and the list. The 1961-1971 period represents the only exception when the natural growth is slightly under the total growth. Finally, it should be noted that the evolution of curve (2) is influenced by variations in the under-registration of the population according to the different censuses and the 1977 list. Although we do not understand the importance of this last factor, we could, in the meantime, assume that the rate of growth measured from the censuses and the list (curve 2), is closer to the real rate of growth than those represented by the two other curves.

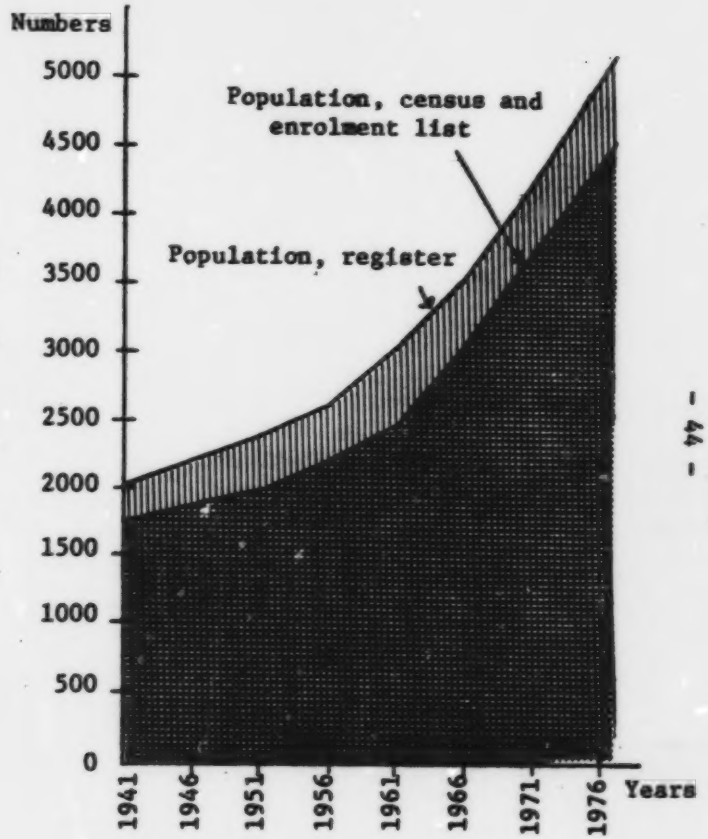
Figure 9 shows very well the effect of variation between the natural growth (curve 1, figure 8) and total growth (curve 2, figure 8), in the evolution of the differences between the population estimated by the register on one hand, and on the other hand, the numbers obtained

Fig. 8: Growth rates for the Inuit of Northern Québec according to the register, and according to the census and the enrolment commission list, and growth rates for the total population of Québec, 1941-1951 to 1971-1977.



Sources: Inuit: Tables 4 and 5.
Total population: Census of Canada.

Fig. 9: Inuit population of Northern Québec according to the register on one hand, the census and the enrolment commission list on the other hand, 1941 to 1977.



Source: Table 1.

by the censuses and the 1977 list. Thus, the numbers estimated by the register are always superior to those obtained from official sources because the natural growth obtained from the register is over-estimated compared to the growth obtained from the censuses and the list. The variation between the numbers provided from these two sources varies directly as a function of the differences between these growths.

The five indices presented above constitute only a brief picture of Inuit demography, even though they illustrate the particular situation of a population which has experienced a fertility, a mortality and a growth rate clearly superior to the Québec average. The evolution of recent years however, presents a slight reconciliation between the two populations.

When the computerization of the register's data will be completed, it will be possible to calculate a few more elaborated indices, permitting a more complete knowledge of Inuit demographic characteristics. We will also be able to calculate indices regarding fertility according to age, order of birth, place of residence, as well as indices concerning the mortality according to age, place of residence, marital status and cause of death.

However, we must note that this register can never be as complete as the ones used in certain Scandinavian countries, except if legal changes occur. In these countries, the registration of vital statistics and of changes of residence are compulsory, and are subject to law enforcement. Those registers therefore cover the entire population and permit the assessment of most important demographic characteristics. In contrast, our register does not cover the whole Inuit population of Northern Québec, and in particular the register is faced with the impossibility of estimating migratory movements. Although the register is not a precise means of research, it nevertheless remains the best tool available to study Inuit demography in Northern Québec.

APPENDIX

Table 1

Inuit population according to the structure of the register on the first of July 1977, and according to the census and the enrolment commission list, Northern Québec, 1931 to 1977.

Dates	Population according to the register	Population according to the census and the enrolment commission list	
		Observed	Estimated(1)
1/6/1931	1398	1159	
1/6/1936	1752		1436
1/6/1941	2055	1778	
1/6/1946	2190		1881
1/6/1951	2410	1989	
1/6/1956	2598		2215
1/6/1961	3020	2467	
1/6/1966	3569		3044
1/6/1971	4254	3755	
15/6/1974	4732		4121
1/4/1976			4342
1/7/1977	5175	4523	

Sources: Inuit register, Département de démographie, Université de Montréal.

Census of Canada.

Enrolment commission list, 1977.

Note: (1) Estimated according to the formula $P_{x+n} = P_x(1+r)^n$ where

P_{x+n} = Population enumerated at time x+n

P_x = Population enumerated at time x

r = Average annual rate of growth

n = Time interval

Table 2

Crude birth rate and general fertility rate for the Inuit population, Northern Québec, 1930-1932 to 1975-1977 (annual average rate in thousand).

Periods	Births	Average population	Female population 15-44 years	Crude birth rate	General fertility rate
1930-1932	206	1159	282	59	244
1935-1937	202	1436		47	
1940-1942	178	1778	422	33	141
1945-1947	272	1881		48	
1950-1952	299	1989	496	50	201
1955-1957	337	2215		51	
1960-1962	437	2467	511	59	285
1965-1967	472	3044		52	
1970-1972	517	3755	780	46	221
1975-1977(1)	415	4342		38	

Sources: Average population: Table 1.
Female population 15-44 years: Census of Canada.
Births: Inuit register, Département de démographie, Université de Montréal.

Note: (1) January 1st 1975 to July 1st 1977.

Table 3

Crude death rate and infant mortality rate for the Inuit population, Northern Québec, 1945-1947 to 1975-1977 (annual average rate in thousand).

Periods	Deaths	Average population	Crude death rate	Infant deaths	Births	Infant mortalit rate
1945-1947	208	1881	37	51	272	187
1950-1952	223	1984	37	57	299	191
1955-1957	141	2215	21	72	337	214
1960-1962	129	2467	17	68	437	156
1965-1967	128	3044	14	36	472	76
1970-1972	74	3755	7	26	517	50
1975-1977(1)	54	4342	5	23	415	55

Sources: Average population: Table 1.

Deaths, infant deaths and births: Inuit register, Département de démographie, Université de Montréal.

Note: See Table 2.

Table 4

Natural increase rate for the Inuit according to the register on one hand, and according to the register, the census and the enrolment commission list on the other hand, Northern Québec, 1941-1951 to 1971-1977 (annual average rate in thousand).

Periods	Natural increase rate according to the register					Natural increase rate according to the census and the enrolment commission list	
	Births	Deaths	Natural increase	Average population according to the register	Natural increase rate	Average population according to the census and the enrolment commission list	Natural increase rate
1941-1951	884	530	354	2190	16	1881	20
1951-1961	1164	549	615	2598	24	2215	28
1961-1971	1601	356	1245	3569	35	3044	41
1971-1977	1075	146	929	4732	32	4121	37

Sources: Population: Table 1.
Births and deaths: Inuit register, Département de démographie, Université de Montréal.

Table 5

Growth rate for the Inuit according to the census and the enrolment commission list, Northern Québec, 1941-1951 to 1971-1977 (annual average rate in thousand).

Periods	Total increase	Average population	Growth rate
1941-1951	211	1881	11
1951-1961	478	2215	22
1961-1971	1288	3044	42
1971-1977	768	4121	31

Source: Table 1.

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"Description et utilisation du registre de population des Inuit du Nouveau-Québec"

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Depuis 1967, des chercheurs du Département de démographie de l'Université de Montréal travaillent à l'élaboration d'un registre de population permettant d'étudier les caractéristiques démographiques des Inuit du Nouveau-Québec. Cet article veut donner un bilan de la courte existence du registre, en présentant l'historique des démarches suivies ainsi que la structure et l'exploitation possible de ce registre.

La nécessité d'un registre de population pour les Inuit

Durant les années 1960, l'intérêt porté aux populations autochtones du Nouveau-Québec, dont les Inuit, s'est accru à la suite du développement de l'exploitation des richesses naturelles de cette région, et du besoin de faire bénéficier les autochtones des mêmes subsides et services gouvernementaux - allocations sociales, pensions diverses, instruction - qui étaient octroyés au reste de la population québécoise. Mais afin d'appliquer les différents programmes gouvernementaux, on devait connaître certaines caractéristiques démographiques comme l'âge, l'état matrimonial et le nombre d'enfants à charge. En ce qui concernait les Inuit du Nouveau-Québec, il existait trois sources de données: le recensement canadien, les statistiques de l'état civil et les listes administratives des différents villages inuit. Or prises individuellement, ces trois sources s'avérèrent déficientes pour l'étude des caractéristiques démographiques de cette population. D'un recensement à l'autre, l'examen de l'évolution des générations montrait un mauvais dénombrement de l'âge des Inuit, alors qu'en l'absence de migration, l'effectif de certaines générations augmentait dans le temps, lorsque logiquement une diminution devait se produire, suite à la mortalité (Normandeau, 1976; Normandeau et Légaré, 1979). En fait, pour connaître les caractéristiques démographiques de base des Inuit, le recensement ne peut être d'une grande utilité, si ce n'est pour donner une idée de l'effectif total de population. En effet, un grand nombre parmi ceux-ci ne se souviennent pas de leur âge, de leur lieu de naissance ou du nombre d'enfants qu'ils ont eu. De leur côté, avant 1975, les listes administratives n'ont pu être d'aucun secours. Ces listes ne répondaient qu'à des fins administratives alors que d'une

liste à l'autre, on ne faisait que soustraire les décès et additionner les naissances sans vérifier les informations déjà recueillies (Bernèche et Normandeau, 1981). Comme la qualité et la régularité des listes variaient d'un village à l'autre, il devenait impossible de connaître la situation, à un moment précis, pour l'ensemble des villages inuit. Finalement, pour l'état civil, depuis 1952 le Bureau Fédéral de la Statistique ne publie plus de données selon l'origine ethnique - certains gouvernements provinciaux ayant cessé de demander cette caractéristique sur les formulaires de l'état civil - il n'est donc plus possible de connaître les effectifs de naissances et de décès des Inuit. Or même si ces effectifs peuvent être connus pour le Québec sur demande spéciale - le Québec ayant conservé jusqu'en 1975 la question de l'origine ethnique sur ses formulaires - la structure par âge des mères, en ce qui concerne les naissances de même que celle des décédés, demeurent toujours inconnues.

Ces quelques faits ont incité Jacques Légaré, du Département de démographie de l'Université de Montréal, à créer un registre de population dans le but de mieux connaître les caractéristiques démographiques des Inuit du Nouveau-Québec.

La structure du registre

La philosophie de base du registre consistait à ne retenir que des renseignements venant de sources officielles, c'est-à-dire d'enregistrements d'actes d'état civil. Ces renseignements étaient plus valables que ceux recueillis dans les recensements, puisque le calcul de l'âge d'un Inuk fait à partir de son acte de naissance est plus exact que l'âge déclaré par l'individu lui-même ou par un proche parent. Lors de sa création, on avait donc prévu n'intégrer au registre que des actes d'état civil. Jacques Légaré du Département de démographie bénéficiait alors d'une entente avec le Ministère des Affaires sociales du Québec lui permettant de recevoir les photocopies de tous les actes touchant les Inuit du Québec. En retour, il s'engageait, par souci de respecter la confidentialité des données, à n'émettre aucune information de nature individuelle concernant les Inuit. Les premiers actes de naissance datent de 1926 et les actes de décès de 1941. Le Département a reçu très peu d'actes de mariage puisque les unions, en majeure partie, ne semblent pas faire l'objet d'un enregistrement à l'état civil.

A l'intérieur du registre, une fiche a été établie pour tout Inuk possédant un acte de naissance ou de décès, pour les parents de cet individu déclarés dans l'acte de naissance ou de décès, pour le conjoint déclaré dans l'acte de décès et finalement pour les individus apparaissant sur un acte de mariage. Le fonctionnement du registre des Inuit a été basé sur le registre hollandais. Sur chaque fiche individuelle, on traite, au recto, des renseignements concernant 7 caractéristiques (Légaré, 1967):

1) Identification de l'individu: - numéro de disque et nom.

2) La naissance: - date et lieu de naissance;

- lieu de résidence des parents au moment de la naissance;

- identification des parents: numéro de disque, date, lieu de naissance, origine ethnique. Sont-ils décédés? Etaient-ils mariés à la naissance de cet enfant?

3) Le décès: - date, lieu et cause du décès.

4) L'adoption: - lieu et date de l'adoption;

- identification des parents adoptifs (il s'agit des mêmes renseignements que pour les parents naturels).

5) Le mariage: - lieu, date et type du mariage;

- identification du conjoint: lieu et date de naissance, nom et numéro de disque;

- rupture d'union s'il y a lieu: cause, date et lieu de cette rupture.

6) L'occupation: - nom des différents emplois, ainsi que la date du changement.

7) Lieu de résidence: - énumération des différents lieux de résidence ainsi que la date du changement.

Le sexe de l'individu est identifié par la couleur de la fiche, les fiches vertes sont attribuées aux Inuit de sexe masculin, alors que les fiches jaunes représentent les individus de sexe féminin.

Au verso de la fiche, on retrouve des renseignements sur les enfants de l'individu comme le nom et le numéro de disque de chaque enfant, le lieu et la date de naissance, son sexe; la date et le mode de son départ de la cellule familiale. Il est à noter que certaines caractéristiques ont été déterminées de façon indirecte. Ainsi, on a admis un changement de lieu de résidence ou d'occupation, le jour où sur un

acte quelconque, un lieu de résidence ou une occupation différait de l'ancien. De même, on a considéré deux personnes mariées l'une à l'autre lorsqu'elles se déclaraient ainsi sur l'enregistrement de naissance d'un enfant.

Dans le registre, les fiches ne sont pas classées par ordre alphabétique de nom, mais plutôt par numéro de disque, étant donné que le nom ne représente pas un caractère permanent chez les Inuit puisque son orthographe peut changer, de sorte qu'il devient souvent méconnaissable. De même sur les bandes magnétiques, suite à l'informatisation des dossiers du registre, on ne retrouve que le numéro de disque pour identifier les individus. Ce numéro de disque[1] est attribué à l'Inuk lors de sa naissance et est conservé par celui-ci jusqu'à sa mort. Les numéros de disque se divisent en douze séries représentant autant de régions du Canada. Les séries E1 à E7 et W1 à W3 se trouvent dans les Territoires du Nord-Ouest alors que les séries E8 et E9 représentent les Inuit du Nouveau-Québec ainsi que ceux des îles Belcher et Killinik, ces deux îles appartenant aux Territoires du Nord-Ouest. En ce qui concerne les Inuit des autres régions du Canada, nous ne savons pas si un numéro de disque leur est attribué.

Théoriquement, le registre ainsi créé à partir des actes d'état civil devrait permettre d'effectuer des études démographiques approfondies sur les Inuit du Nouveau-Québec. La réalité est cependant toute autre, puisque l'enregistrement des faits d'état civil de la population inuit est très incomplet. Ainsi Louise Normandeau et Jacques Légaré (Normandeau, 1976, 1976a; Légaré et Normandeau, 1979) ont montré, à partir de naissances retrouvées sur les listes administratives, que le sous-enregistrement des naissances à l'état civil pouvait atteindre les 50%. Bien qu'il ne soit pas possible d'effectuer la même vérification pour les décès, on peut facilement supposer que le sous-enregistrement des décès est au moins égal à celui des naissances. Les actes d'état civil à eux seuls ne représentent donc pas une base suffisante pour l'élaboration du registre des Inuit. Nous verrons un peu plus loin comment nous avons tenté de pallier cette carence.

En 1975, avec le remplacement de la question de l'origine ethnique par celle de la langue maternelle sur les formulaires d'état civil du Québec, il devenait plus difficile de cerner la population visée par le registre. Depuis lors, plusieurs critères doivent être utilisés pour déterminer l'appartenance à l'origine inuit des individus apparaissant sur les actes d'état civil. Ces critères sont la langue maternelle, le lieu de résidence, le nom et la présence d'un numéro de disque. Alors qu'auparavant, le numéro de disque se retrouvait sur tous les actes touchant des Inuit, on a maintenant tendance à l'omettre de plus en plus fréquemment. Celui-ci ne peut donc servir de seul critère pour déterminer l'appartenance au peuple inuit.

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(1) Pour plus de renseignements, voir à ce sujet Roberts (1975).

La signature de la Convention de la Baie James et du Nord québécois, le 11 novembre 1975, entre les autochtones du Nouveau-Québec et le gouvernement québécois devait fournir une deuxième source de renseignements pour le registre des Inuit, il s'agissait de la liste des bénéficiaires inuit. En effet, suite à cette convention, les Cris et Inuit cédaient leurs droits et titres sur les terres du Québec, en retour de quoi ils recevaient une compensation monétaire de 225 millions de dollars - dont 95 millions pour les Inuit - ainsi que certains titres et droits de chasse et pêche. Afin de déterminer les individus admissibles à ces compensations, on a formé une Commission d'inscription chargée de tenir un registre des Cris et Inuit bénéficiaires de la Convention. De cette Commission, est sortie une liste par village des bénéficiaires inuit en date du premier juillet 1977. Pour les Inuit, les règles d'admissibilité aux bénéfices de la Convention de la Baie James sont les suivantes (Lachance-Brulotte, 1976):

> Au 15 novembre 1975, être d'ascendance inuit, être né au Québec ou résider habituellement au Québec ou être reconnu membre d'une des communautés inuit.
>
> A partir du 16 novembre 1974, être enfant légitime ou illégitime ou adoptif par filiation paternelle ou maternelle des personnes reconnues admissibles au point précédent. Etre conjoint - quelque soit l'origine ethnique - des personnes admissibles au 15 novembre 1974.

Les renseignements contenus sur la liste de la Commission ne sont pas aussi précis que ceux provenant des actes d'état civil. Cependant, ils peuvent être considérés comme très valables, puisqu'ils sont vérifiés par un comité local d'inscription, formé de trois personnes, et d'une commission d'appel. La liste ne fournit pas des données aussi détaillées que les actes d'état civil mais a l'avantage de rendre accessible, pour la première fois, une information nominative concernant l'ensemble de la population de tous les villages inuit du Nouveau-Québec, à un moment précis. De plus, la liste renferme des informations sur des Inuit habitant les Territoires du Nord-Ouest et admissibles aux bénéfices de la Convention. Ceci permet d'éliminer ces individus du fichier, puisqu'ils ont émigré hors du Nouveau-Québec. Les informations contenues sur la liste et utiles au registre sont: le nom, le numéro de disque, la date de naissance, le lieu de résidence et le statut familial. Comme les individus sont regroupés par famille, il est possible de déterminer les parents des enfants repérés pour la première fois, et aussi d'établir des liens matrimoniaux. Lorsque pour une même caractéristique, l'information provenant de la liste d'une part, et des actes d'état civil d'autre part, diffèrent, on ne retiendra dans notre registre que l'information fournie par l'état civil.

Finalement, dans un troisième et dernier temps, on a décidé de faire appel à une autre source pour rendre encore plus complète la couverture de la population inuit par le registre, il s'agit des différentes listes administratives, et d'une liste nominative fournissant une date de naissance pour la plupart des numéros de disque des séries E8 et E9 décernés avant 1970, ainsi que quelques dates de décès. Etant donné que les listes administratives ont été élaborées d'une façon plus ou moins précise, elles n'ont servi qu'à ouvrir des fiches pour des individus n'ayant pas été détectés par l'état civil et la liste de la Commission, et à leur attribuer une date de naissance et un lieu de résidence. D'un autre côté, la liste nominative, en plus d'avoir été utilisée pour ouvrir de nouvelles fiches, a servi à attribuer dans certains cas des dates de naissances ou, quelquefois, de décès à des individus repérés antérieurement, mais dont la date de naissance ou de décès était inconnue. Ces listes n'ont donc joué qu'un faible rôle dans l'édification du registre.

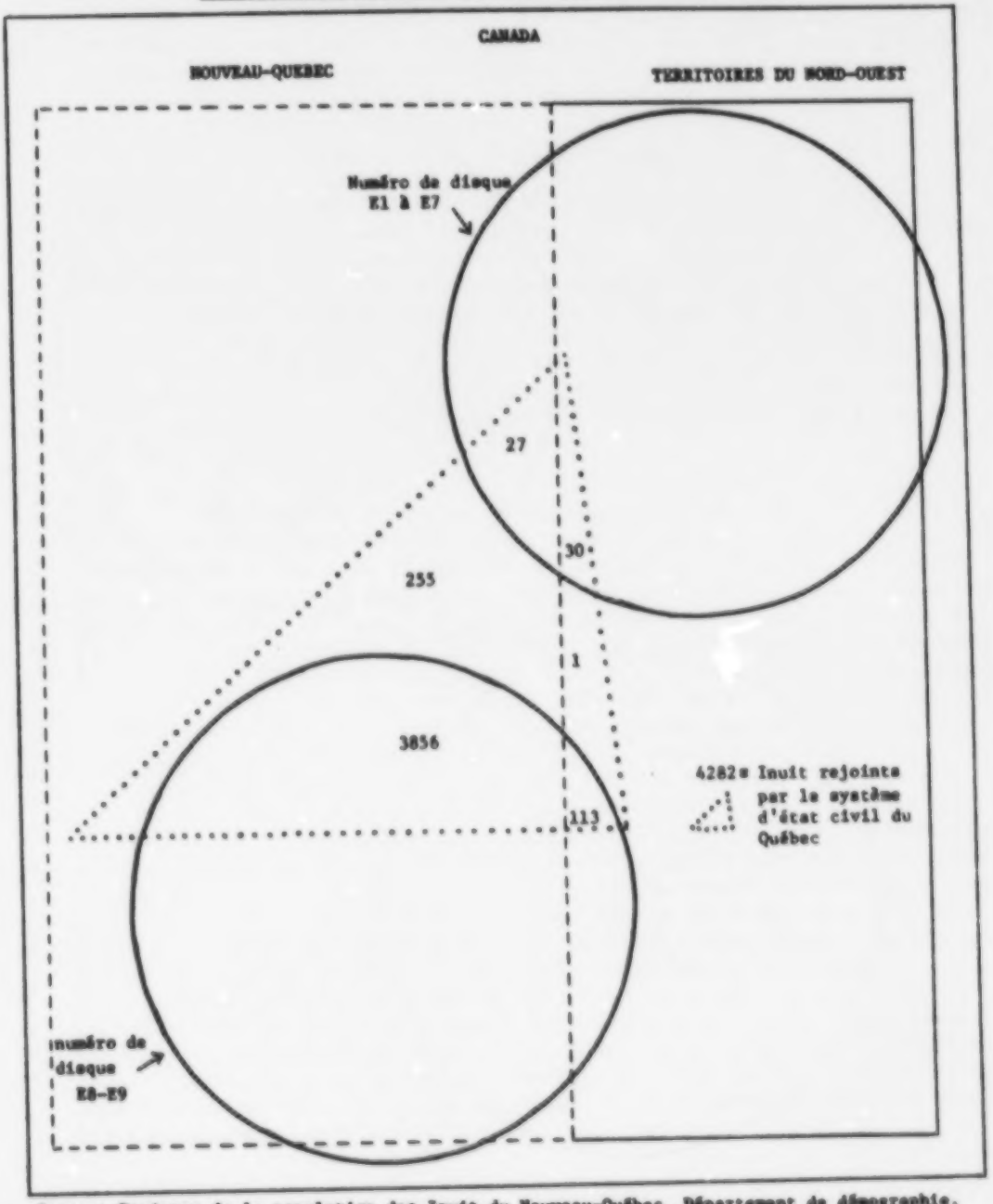
A l'aide de figures, il sera possible de montrer la part jouée par les trois sources dans la structure du registre. Chaque figure présente un portrait de la population inuit couverte par le registre et considérée comme étant vivante et résidant au Nouveau-Québec au premier juillet 1977. Les quelques effectifs donnés pour les Territoires du Nord-Ouest concernent des individus qui ont été détectés par l'état civil ou la liste de la Commission, mais qui ne font pas partie du registre, puisque celui-ci se limite au Nouveau-Québec.

La figure 1 présente les Inuit vivants au premier juillet 1977 et apparaissant sur un acte d'état civil du Québec. Le lieu de résidence à cette date est déterminé par la dernière adresse connue selon les trois sources. Sur les 4282 individus ainsi rejoints, le registre en renferme 4138, soit tous ceux qui résident au Nouveau-Québec. De ces 4138 individus, près de 93% possèdent un numéro de disque E8 ou E9, ce qui signifie, rappelons-le, qu'ils sont nés au Nouveau-Québec ou dans les îles adjacentes. Les 27 individus ayant un numéro commençant par E1 à E7 et résidant au Nouveau-Québec sont des immigrants alors que les 113 Inuit dotés d'un numéro des séries E8 ou E9 et résidant dans les Territoires du Nord-Ouest sont ou des émigrants ou des résidants des îles Belcher et Killinik.

Sur la figure 2, on retrouve intégralement les effectifs tirés de la liste de la Commission. Ainsi au premier juillet 1977, il y avait 4523 Inuit résidant au Nouveau-Québec qui se sont inscrits sur la liste. Tous ces individus sont compris dans le registre. Parmi ces 4523 individus, près de 97% possèdent un numéro de disque des séries E8 ou E9. La liste comporte également 305 Inuit qui résident dans les Territoires du Nord-Ouest, ainsi que 81 individus ayant migré des Territoires du Nord-Ouest vers le Nouveau-Québec.

Figure 1

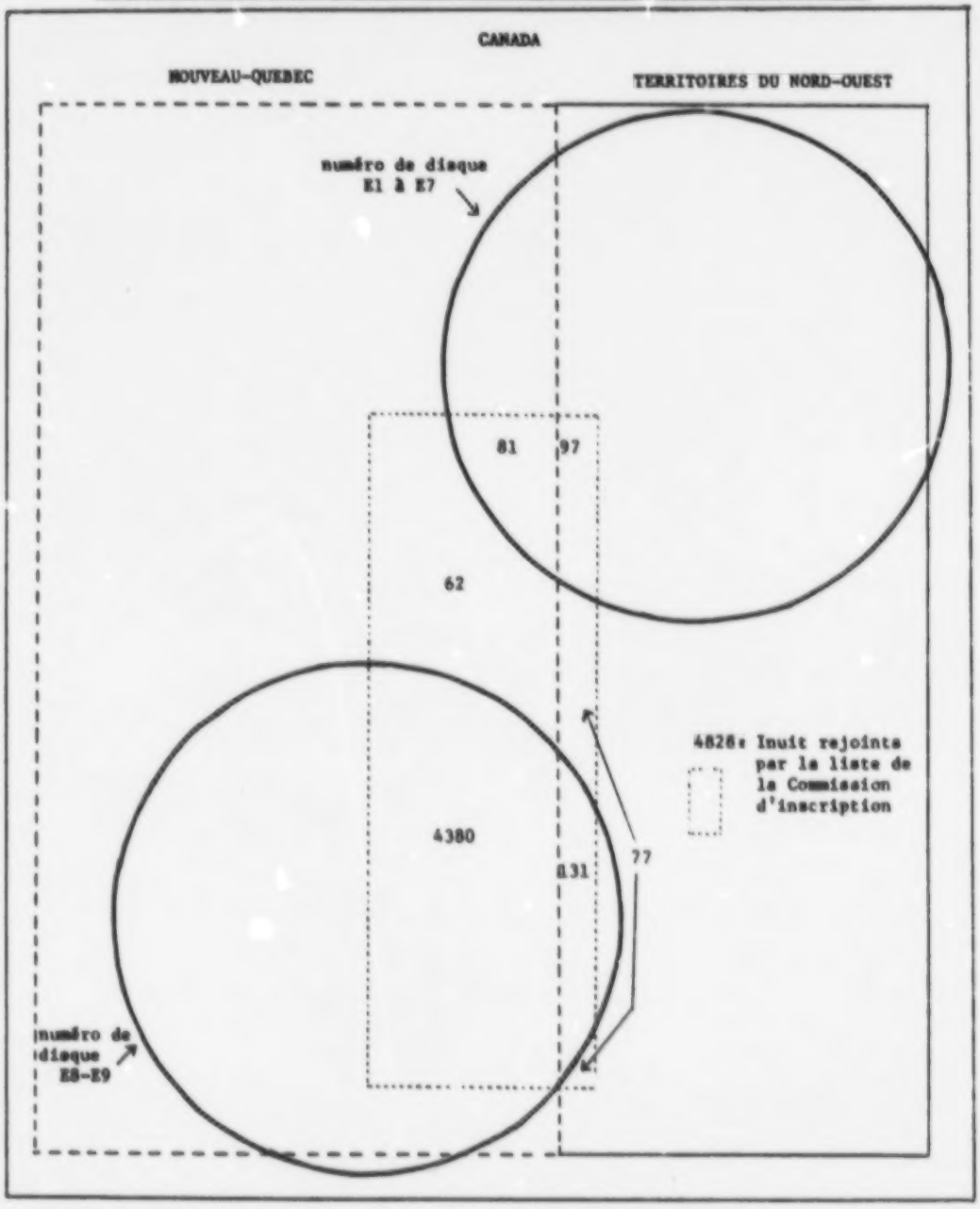
Effectifs des Inuit rejoints par l'état civil, selon le numéro de disque et le lieu de résidence, Nouveau-Québec, 1er juillet 1977.



Source: Registre de la population des Inuit du Nouveau-Québec, Département de démographie.

Figure 2

Effectifs des Inuit rejoints par la Commission d'inscription, selon le numéro de disque et le lieu de résidence, Nouveau-Québec, 1er juillet 1977.



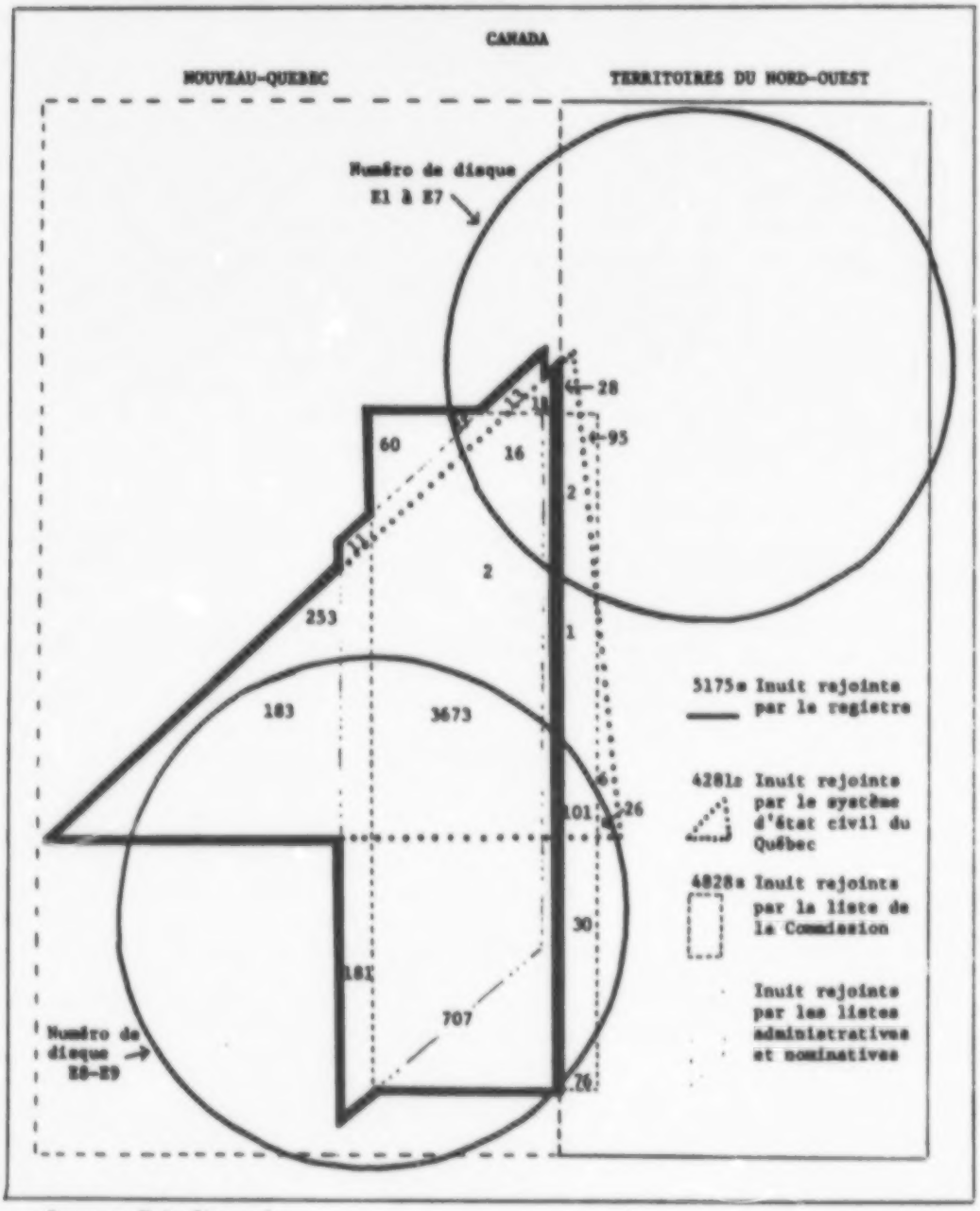
Source: Liste de la Commission d'inscription, Convention de la Baie James et du Nord québécois, 1977.

La figure 3 permet de voir la structure entière du registre au premier juillet 1977 ainsi que l'apport individuel de chacune des trois sources. Ainsi, l'utilisation des renseignements fournis par la liste de la Commission a eu pour effet d'ajouter 832 individus de plus au registre initialement construit à partir des seuls actes d'état civil. De même, l'apport des listes administratives et nominatives a permis l'addition, dans une troisième étape, de 205 autres personnes. La population vivante et résidante du registre au premier juillet 1977 est passée, successivement de 4138 individus à 4970 avec la liste de la Commission, et finalement à 5175 personnes dont au moins 105 immigrants. Parmi les 5175 personnes considérées vivantes par le registre, 3673 ou 71% se trouvent à la fois sur un acte d'état civil et sur la liste de la Commission. Les renseignements contenus dans le registre sur ces 3673 individus sont très détaillés puisqu'ils proviennent de deux sources officielles et complémentaires, ce qui n'est pas le cas pour les 1502 autres individus dont les informations ne sont tirées que d'une seule source officielle (état civil ou liste de la Commission) ou des listes administratives. Les listes administratives n'ont en effet servi qu'à donner des informations sur les individus repérés par aucune de ces deux sources officielles.

Bien que le registre détermine un effectif de 5175 Inuit résidant au Nouveau-Québec au premier juillet 1977, il ne faut pas en conclure immédiatement que cela représente la population réelle. L'effectif obtenu à partir de la liste de la Commission, soit 4523, s'approche beaucoup plus de la réalité. En fait, le registre possède deux vices de forme reliés à la couverture des décès. Le premier concerne les individus apparus sur un acte d'état civil et décédés avant 1941, soit avant l'introduction d'un système d'enregistrement des décès chez les Inuit. Comme ces individus ne possèdent pas d'acte de décès, ils ne peuvent sortir du registre et sont donc considérés vivants par celui-ci. Le deuxième se rapporte au sous-enregistrement des décès. Alors qu'il a été possible de rejoindre, par les différentes listes, la majorité des naissances non-enregistrées à l'état civil, l'opération est irréalisable pour les décès non-enregistrés. Ainsi, la population vivante du registre s'accroît, d'année en année, plus rapidement que la population réelle suite au sous-enregistrement des décès. Ces deux lacunes expliquent en grande partie la différence d'effectif, soit 652, entre le registre et la liste de la Commission. On pourrait éliminer une partie de ces individus, en considérant leur date de naissance, et en supposant qu'à un certain âge, tout le monde devrait être mort. De même, lorsqu'un individu demeure absent sur les listes consécutives des dernières années, on pourrait le supposer mort ou émigré. Les listes administratives des cinq dernières années, qui sont de bien meilleure qualité que les anciennes, ainsi que la liste de la Commission seraient toutes indiquées pour cette opération.

Figure 3

Effectifs du registre des Inuit selon la source d'information, le numéro de disque et le lieu de résidence, Nouveau-Québec, 1er juillet 1977.



Source: Voir figure 1.

Utilisation du registre

Le registre n'a pas encore atteint son utilité maximale puisque l'informatisation des renseignements contenus sur les fiches n'est pas complétée. Ainsi, pour le moment, les mesures possibles ne peuvent s'effectuer qu'à la suite de compilations manuelles. Voici quelques exemples de l'utilisation que l'on peut faire actuellement du registre. A partir des effectifs de naissances et de décès fournis par le registre d'une part, du recensement canadien et des populations estimées par le registre entre deux recensements, d'autre part, il a été possible de mesurer sommairement l'évolution de la fécondité, de la mortalité et de l'accroissement des Inuit lors des dernières décennies. Les mesures de la mortalité devront être analysées avec beaucoup de prudence en raison du sous-enregistrement des décès.

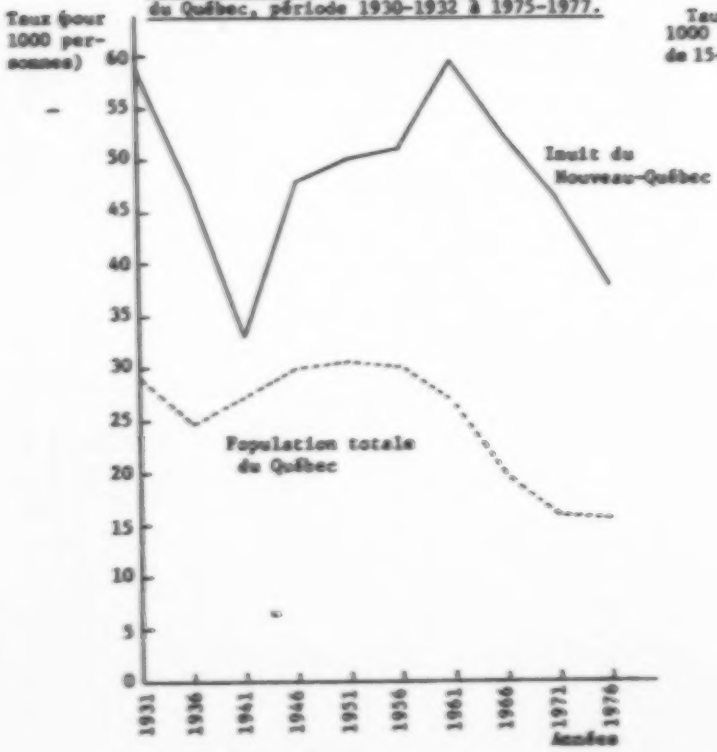
On devra cependant être conscient que l'image de la population contenue dans le registre, pour une date passée, continue d'évoluer à mesure que de nouvelles informations sont compilées. L'image de la population donnée par le registre est donc fonction de l'état de celui-ci au moment de l'analyse. Ainsi, les résultats qui seront présentés ci-dessous sont le reflet de la situation du registre au 1er juillet 1977.

Le taux brut de natalité

Il existe plusieurs indices servant à mesurer la fécondité. Le taux brut de natalité est le plus simple mais aussi le moins spécifique puisqu'il est influencé par la structure par âge de la population. Ce taux se calcule en rapportant le nombre annuel moyen de naissances ayant été observées durant une période donnée à l'effectif total de la population au milieu de cette période. Sur la figure 4, on remarque les deux sommets atteints, en 1931 et 1961, par le taux brut de natalité des Inuit. Depuis cette dernière date, le taux a diminué d'une façon constante. Lorsqu'on compare la natalité de la population inuit à celle de l'ensemble du Québec, on voit qu'elle suit les mêmes tendances tout en étant nettement supérieure. La baisse de la natalité semble avoir débuté plus tard chez les Inuit. Bien que la natalité des deux populations suive un même modèle, on ne peut associer à ces deux populations les mêmes explications dans la variation de la natalité, les modes de vie étant trop différents. Pour les Inuit, la courbe peut être à la fois influencée par la qualité de l'enregistrement et les variations de la natalité, même si on a tenté d'enrayer le plus possible le sous-enregistrement des naissances. La hausse constante observée entre 1941 et 1961 peut donc s'expliquer à la fois par une amélioration du niveau de vie - diminution du nombre de morts-nés, de fausses couches - et par une amélioration de l'enregistrement, tandis que la baisse des années 1960 peut sans doute coincider avec une volonté de réduire les naissances, sans que l'on puisse exclure totalement pour les dernières années une détérioration de l'enregistrement des événements.

Figure 4

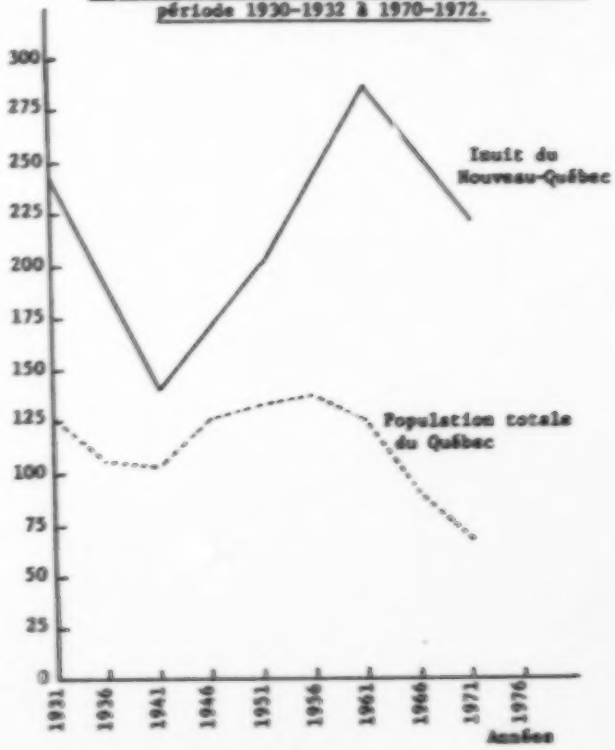
Taux bruts de natalité des Inuit du Nouveau-Québec et de la population totale du Québec, période 1930-1932 à 1975-1977.



Sources: Inuit: Tableau 2
Population totale: BUREAU FEDERAL DE LA STATISTIQUE, Statistiques de l'état civil. Recensements du Canada

Figure 5

Taux globaux de fécondité générale des Inuit du Nouveau-Québec et de la population totale, période 1930-1932 à 1970-1972.



Sources: Voir figure 4.

Le taux global de fécondité générale

Le taux global de fécondité générale a l'avantage, par rapport aux taux brut de natalité, de ne pas être influencé par la structure par âge de la population, alors qu'il rapporte le nombre de naissances observées aux effectifs de femmes en âge de procréer. La figure 5 montre une évolution analogue à celle observée pour le taux brut de natalité. La population inuit possède donc une fécondité beaucoup plus forte que la moyenne québécoise, mais qui est en baisse depuis les années 60 à cause, vraisemblablement, d'une utilisation de plus en plus marquée de moyens contraceptifs.

Le taux brut de mortalité

Certaines mesures utilisées pour estimer la mortalité d'une population peuvent entraîner des erreurs d'interprétation. Ainsi, le taux brut de mortalité, qui est le rapport du nombre annuel moyen de décès durant une période donnée à la population moyenne de cette période, dépend à la fois de la structure par âge et de l'état sanitaire général de la population étudiée. Sur la figure 6, on constate que le taux brut de mortalité des Inuit n'a cessé de diminuer de 1951 à 1976, passant de 37‰ à 5‰ alors qu'il devient inférieur à la moyenne québécoise. Les taux des deux populations ne sont cependant pas comparables, puisque les Inuit présentent à la fois une structure par âge plus jeune et un sous-enregistrement des décès nettement plus important.

Le taux de mortalité infantile

Le taux de mortalité infantile va permettre de mieux illustrer la situation des Inuit par rapport à la moyenne québécoise. En effet ce taux, qui représente le nombre de décès d'enfants de moins d'un an, durant une période donnée, divisé par le nombre de naissances durant la même période, n'est pas affecté par la structure par âge de la population et constitue un excellent indicateur des conditions sociales, économiques et sanitaires d'une population. La figure 7 présente une légère hausse du taux durant les années 1950 suivie d'une chute importante jusqu'à 1971, et finalement d'une stabilisation du taux depuis ce temps. La comparaison avec la moyenne québécoise montre une forte surmortalité chez les Inuit, bien que l'écart semble diminuer durant les dernières décennies. Alors que la hausse du taux de mortalité infantile durant les années 1950 ne semble pouvoir s'expliquer que par une meilleure couverture des décès à l'état civil, la baisse des décennies subséquentes reflète sans doute une amélioration réelle des conditions sociales et sanitaires chez les Inuit. Cependant le taux de mortalité infantile véritable des Inuit, compte tenu du sous-enregistrement des décès à l'état civil, devrait se situer à un niveau beaucoup plus élevé. C'est ce qu'ont démontré Louise

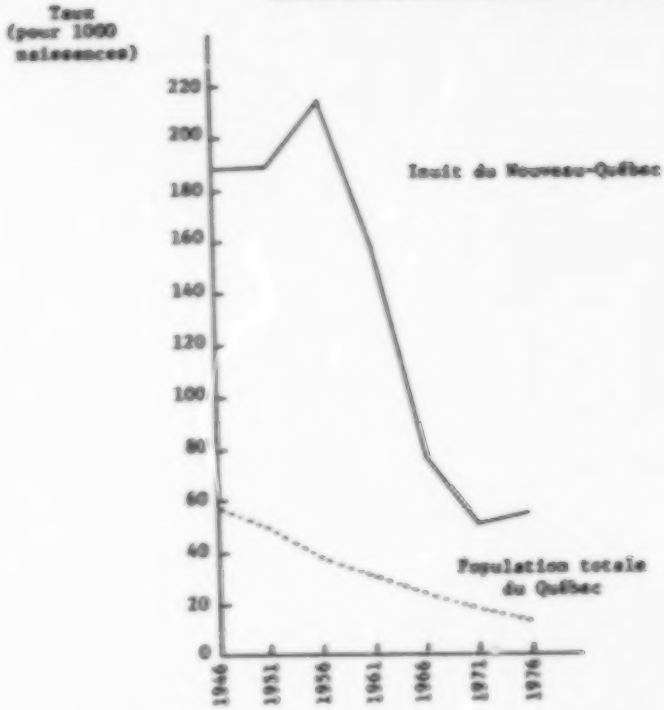
Figure 6

Taux bruts de mortalité des Inuit du Nouveau-Québec et de la population totale du Québec, période 1945-1947 à 1975-1977.

Sources: Inuit: Tableau 3.
Population totale: BUREAU FEDERAL DE LA STATISTIQUE, Statistiques de l'état civil. Recensements du Canada.

Figure 7

Taux de mortalité infantile des Inuit du Nouveau-Québec et de la population totale du Québec, période 1945-1947 à 1975-1977.



Sources: Voir figure 7.

Normandeau et Jacques Légaré (Normandeau et Légaré, 1979; Légaré, 1981), à l'aide d'une méthode permettant d'estimer les effectifs de décès infantiles ayant échappé à l'état civil. Les taux ainsi obtenus sont beaucoup plus élevés mais montrent une chute constante jusqu'à la fin des années 1960, alors que la hausse observée durant les années 1950 se change en baisse à la suite de cette correction. La stabilisation du taux de mortalité infantile entre 1971 et 1976 ne correspond pas nécessairement à un plafond atteint dans l'amélioration des conditions sociales et sanitaires des Inuit. Elle peut dépendre autant d'une variation dans la qualité de l'enregistrement des faits d'état civil touchant les Inuit, que d'un arrêt momentané dans la baisse de la mortalité infantile.

Le taux d'accroissement

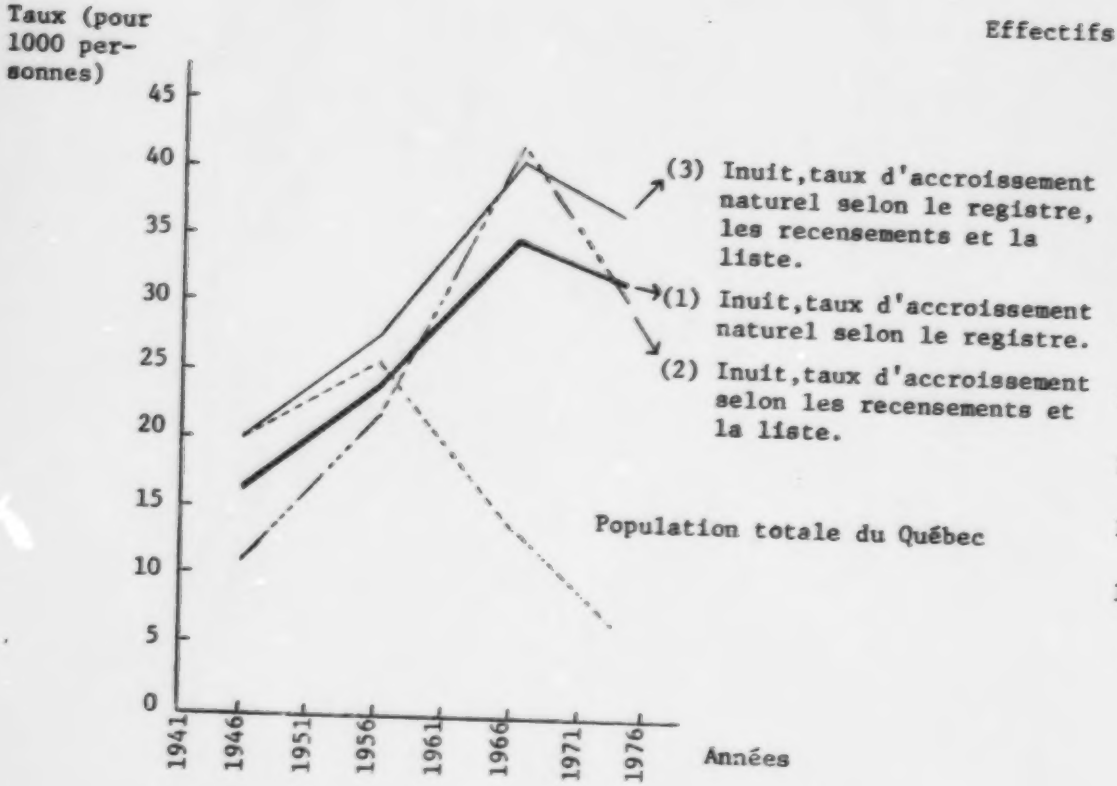
A partir de la différence des effectifs de naissance et de décès d'une population, on obtient l'accroissement naturel de cette même population. Lorsque cette population n'est pas affectée par des échanges migratoires avec l'extérieur, l'accroissement naturel devient l'accroissement total. Dans le cas des Inuit, si on suppose que la migration joue un rôle négligeable dans l'accroissement de la population, il est possible d'estimer l'accroissement total de la population du registre en considérant uniquement les naissances et les décès. Mais pour obtenir une mesure comparable dans le temps, le taux d'accroissement total, qui rapporte l'accroissement annuel moyen de la population durant une période donnée, à la population observée ou estimée au milieu de la même période, sera utilisé.

La figure 8 présente l'évolution des taux d'accroissements annuels moyens de la population inuit selon que l'on tient compte: (1) de l'accroissement naturel et des effectifs estimés par le registre; (2) de l'accroissement total provenant des effectifs fournis par les recensements et la liste de 1977 et (3) de l'accroissement naturel du registre et des effectifs fournis par les recensements et la liste de 1977. On remarque la similitude dans l'évolution des taux ainsi obtenus, mais aussi un écart en ce qui concerne l'intensité. La différence entre les taux des courbes (1) et (3) se situe uniquement au niveau des effectifs de population considérés alors que les effectifs estimés par le registre sont plus élevés que ceux provenant des recensements et de la liste de 1977. On a montré précédemment que le registre possédait deux vices de forme reliés à la couverture des décès, ce qui tendait à rendre ses effectifs de population supérieure à la réalité.

D'un autre côté, les écarts entre les courbes (2) et (3) sont le reflet des différences entre l'accroissement naturel obtenu du registre et l'accroissement total tiré des recensements et de la liste de 1977, et s'expliquent par le sous-dénombrement des naissances et des décès compris dans le registre. Lorsque le sous-enregistrement des naissances est plus

Figure 8

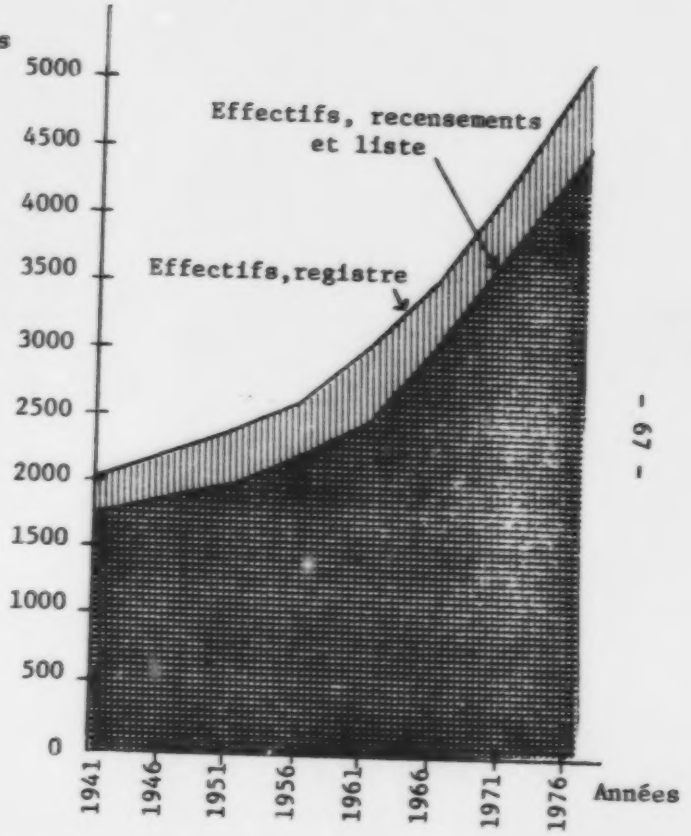
Taux d'accroissement des Inuit du Nouveau-Québec selon le registre, et selon les recensements et la liste de 1977 et taux d'accroissement de la population totale du Québec, période 1941-1951 à 1971-1977.



Sources: Inuit: Tableaux 4 et 5
Population totale: Recensements du Canada

Figure 9

Effectifs de population des Inuit selon le registre d'une part, les recensements et la liste de 1977 d'autre part, Nouveau-Québec 1941 à 1977.



Source: Tableau 1

marqué que celui des décès, l'accroissement naturel estimé par le registre est inférieur à la réalité alors qu'il devient supérieur lorsque ce sont les décès qui possèdent un sous-enregistrement plus fort. Comme le sous-enregistrement des décès est vraisemblablement plus marqué que celui des naissances, l'accroissement naturel se trouve sur le graphique à un niveau plus élevé que celui obtenu à partir des recensements et de la liste. La période 1961-1971 représente la seule exception alors que l'accroissement naturel se retrouve à peine au-dessous de l'accroissement total. Finalement, il serait bon de noter que l'évolution de la courbe (2) est influencée par les variations du sous-dénombrement des effectifs de la population selon les divers recensements et la liste de 1977. Bien que nous ne connaissions pas pour le moment, l'importance jouée par ce dernier facteur, on peut cependant supposer en attendant une analyse plus poussée, que le taux d'accroissement mesuré à partir des recensements et de la liste (courbe 2), s'approche davantage du taux d'accroissement réel que les taux représentés par les deux autres courbes.

La figure 9 illustre bien l'effet des écarts entre l'accroissement naturel (courbe 1, figure 8) et l'accroissement total (courbe 2, figure 8) sur l'évolution des différences entre les effectifs estimés par le registre d'une part, et ceux obtenus par les recensements et la liste de 1977 d'autre part. Ainsi, les effectifs estimés par le registre se trouvent toujours supérieurs à ceux obtenus par les sources officielles, puisque l'accroissement naturel obtenu par le registre est surestimé par rapport à l'accroissement obtenu à partir des recensements et de la liste. L'écart entre les effectifs provenant de ces deux sources varie directement en fonction des différences entre ces accroissements.

Les 5 indices présentés ci-dessus ne constituent qu'une image très sommaire de la situation démographique des Inuit, bien qu'ils montrent la situation particulière de cette population qui jouit d'une fécondité, d'une mortalité et d'un accroissement nettement supérieurs à la moyenne québécoise. L'évolution des dernières années présente cependant un léger rapprochement entre les deux populations.

Lorsque l'informatisation des données du registre sera complétée, il sera possible de calculer un certain nombre d'indices plus élaborés permettant de connaître les différentes caractéristiques démographiques des Inuit. On pourra ainsi calculer des indices de fécondité par âge, rang de naissance, lieu de résidence ainsi que des indices de mortalité par âge, lieu de résidence et état matrimonial pour n'en citer que quelques-uns.

Cependant, il faut bien indiquer que ce registre ne pourra jamais être aussi complet que les registres utilisés dans certains pays scandinaves, à moins de changements législatifs imprévus. Dans ces pays, l'enregistrement des faits d'état civil et des déplacements est obligatoire et est sanctionné par une loi. Ces registres couvrent donc l'ensemble des

événements et permettent de mesurer la plupart des caractéristiques démographiques touchant ces populations. Par contre, notre registre ne rejoint pas l'ensemble des événements concernant les Inuit du Nouveau-Québec; il ne permet donc pas de mesures précises des divers phénomènes démographiques et tout particulièrement de la migration puisqu'aucun déplacement n'est enregistré. Il n'en demeure pas moins le meilleur instrument pour étudier la situation démographique des Inuit.

ANNEXE

Tableau 1

Effectifs de population des Inuit selon la structure du registre au 1/7/77 d'une part, et selon les recensements et la liste de 1977 d'autre part, Nouveau-Québec, 1931 à 1977.

Dates	Effectifs du registre	Effectifs des recensements et de la liste de 1977	
		Observés	Estimés[1]
1/6/1931	1398	1159	
1/6/1936	1752		1436
1/6/1941	2055	1778	
1/6/1946	2190		1881
1/6/1951	2410	1989	
1/6/1956	2598		2215
1/6/1961	3020	2467	
1/6/1966	3569		3044
1/6/1971	4254	3755	
15/6/1974	4732		4121
1/4/1976			4342
1/7/1977	5175	4523	

Sources: Registre de la population des Inuit du Nouveau-Québec (structure au 1/7/1977), Département de démographie, Université de Montréal.

Recensements du Canada.

Liste de la Commission d'inscription, Convention de la Baie James et du Nord québécois, 1977.

Note: (1) Effectifs estimés selon la formule $P_{x+n} = P_x(1+r)^n$

où P_{x+n} = Effectif observé en fin de période

P_x = Effectif observé en début de période

r = Taux d'accroissement annuel moyen

n = Durée de la période

Tableau 2

Taux bruts de natalité et taux globaux de fécondité générale des Inuit, Nouveau-Québec, période 1930-1932 à 1975-77 (Taux annuels moyens pour 1000).

Période	Naissances	Population moyenne	Population féminine de 15-44 ans	Taux bruts de natalité	Taux globaux de fécondité générale
1930-1932	206	1159	282	59	244
1935-1937	202	1436		47	
1940-1942	178	1778	422	33	141
1945-1947	272	1881		48	
1950-1952	299	1989	496	50	201
1955-1957	337	2215		51	
1960-1962	437	2467	511	59	285
1965-1967	472	3044		52	
1970-1972	517	3755	780	46	221
1975-1977(1)	415	4342		38	

Sources: Population moyenne: Tableau 1.

Population féminine de 15-44 ans: Recensements du Canada.

Naissances: Registre de la population des Inuit du Nouveau-Québec (structure au 1/7/77), Département de démographie, Université de Montréal.

Note: (1) Période du 1/1/1975 au 1/7/1977.

Tableau 3

Taux bruts de mortalité et taux de mortalité infantile des Inuit, Nouveau-Québec, période 1945-1947 à 1975-1977 (Taux annuels moyens pour 1000).

Périodes	Décès	Population moyenne	Taux bruts de mortalité	Décès infantiles	Naissances	Taux de mortalité infantile
1945-1947	208	1881	37	51	272	187
1950-1952	223	1984	37	57	299	191
1955-1957	141	2215	21	72	337	214
1960-1962	129	2467	17	68	437	156
1965-1967	128	3044	14	36	472	76
1970-1972	74	3755	7	26	517	50
1975-1977(1)	54	4342	5	23	415	55

Sources: Population moyenne: Tableau 1.

Décès, décès infantiles et naissances: Registre de la population des Inuit du Nouveau-Québec (structure au 1/7/77), Département de démographie, Université de Montréal.

Note: Voir Tableau 2.

Tableau 4

Taux d'accroissement naturel des Inuit selon le registre d'une part, et selon le registre et les sources officielles d'autre part, Nouveau-Québec, période 1941-1951 à 1971-1977 (Taux annuels moyens pour 1000).

Périodes	Taux d'accroissement naturel selon le registre					Taux d'accroissement naturel selon les sources officielles(1)	
	Naissances	Décès	Accroissement naturel	Population du registre en milieu de période	Taux d'accroissement	Population moyenne selon les sources officielles(1)	Taux d'accroissement
1941-1951	884	530	354	2190	16	1881	20
1951-1961	1164	549	615	2598	24	2215	28
1961-1971	1601	356	1245	3569	35	3044	41
1971-1977	1075	146	929	4732	32	4121	37

Sources: Population: Tableau 1.

Naissances et décès: Registre de la population des Inuit du Nouveau-Québec (structure au 1/7/77), Département de démographie, Université de Montréal.

Note: (1) Il s'agit des recensements et de la liste de la Commission d'inscription.

Tableau 5

Taux d'accroissement total des Inuit selon les sources officielles(1), Nouveau-Québec, période 1941-1951 à 1971-1977 (Taux annuels moyens pour 1000).

Période	Accroissement total	Population moyenne	Taux d'accroissement
1941-1951	211	1881	11
1951-1961	478	2215	22
1961-1971	1288	3044	42
1971-1977	768	4121	31

Source: Tableau 1

Note: (1) Voir note au Tableau 4.

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"Population research and northern political studies"

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My presentation will be made in two parts. First, I want to say something about the Northern Political Studies Program at the University of Calgary, with which I am associated. Second, I have some general remarks about the relevance of population research to northern political studies. As you requested, these will respond to points made yesterday by Dr. Bone about the future of government in the Northwest Territories, and they will take up some of the issues raised in this morning's discussion about the relationship between research on the North, and northerners.

I. Northern Political Studies Program

The Northern Political Studies Program is a cooperative enterprise of the Arctic Institute of North America and the Department of Political Science at the University of Calgary. It is designed to promote a greater understanding of political developments in Canada's North and in other Arctic regions. Funding for the first three years of the program has come principally from the Donner Canadian Foundation.

There is further information about the Program on the hand-out which you have in front of you.* The goals of the Program are set out on the third page. The first goal is to build a fund of knowledge, expertise and ideas relevant to the problems of northern political development and to make that fund available to academics, northern residents, governments and other interested individuals and institutions. The second is to train and otherwise encourage the formation of a cadre of well-educated professionals (academic and non-academic) who will continue to study northern problems and work on solutions. The principles which guide the achievement of these goals are listed on this page. I won't read through them, but would like to emphasize that we are particularly concerned to cooperate with northerners in identifying and choosing projects for study, and indeed, that we seek the advice of all of you, as northern specialists, in these matters as well.

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* See Appendix.

Some of the research already underway in the Program is mentioned on page 1. My own work has focussed on the political changes which occurred in the western part of the Northwest Territories between 1965 and 1980. The two axes of analysis are, on the one hand, northern native political development, and on the other, changes in federal northern policy-making and administrative machinery during that period; the two developments are of course intimately related.

II. Population Research and Northern Political Studies

To state the obvious first, it is clear that our disciplines are interdependent. It is not possible to say much about either the politics or the administration of the North without the kind of basic and detailed population information which the members of this Committee are generating. Data about the distribution of population, its rate of growth, changes in the ethnic mix, and the population age profile are all fundamental to understanding electoral and non-electoral politics, and to planning for the administration of services. Conversely, as Dr. Bone observed yesterday, without detailed knowledge about the many social and political factors which impinge upon population dynamics, intelligent demographic analysis and projection is not possible.

Furthermore, because of the nature of northern studies, our research activities are related to an unusual degree. There are three factors here, which taken together argue for cooperation and regular communication among people working in different disciplines. These factors are:

(1) the high cost of field work;

(2) the non-replicability of some kinds of field work, especially in native communities; and

(3) certain ethical questions, having to do with the natural resentment of over-studied populations (who cannot be expected to welcome an endless succession of social scientists) and also with the fact that our research takes place in a transitional social and political context.

There are differing interests in the North, and these interests are engaged in working out the most fundamental terms of the future of the region, in terms of land claims and the evolution of territorial government. Sometimes our research activities and our conclusions will have important political consequences, and it is only responsible scholarship to be aware of these. Probably the point is sharper in my own discipline than in yours, which can rely upon at least some objective resources

such as existing population registers and the census. To find out what is happening in northern politics, it is necessary to speak with a broad range of northerners and involved southerners at length and in confidence. This in turn requires a relationship of trust and open communication and at the same time a clear preservation of the non-partisan distance from issues and events which makes scholarly analysis possible. But as the discussion this morning makes very clear, in demography too these issues arise, in connection with the kinds of data which become available, the viability of field research, and the working relationship between professional demographers and the populations they study.

Without question, some of the most important issues for political studies currently arise in connection with land claims and the future of government in both territories. In the discussion which follows I restrict my remarks to the situation in the Northwest Territories, with which I am most familiar. And I should add that the views presented now are mine, and not necessarily the views of other members of the Program.

First, let us return to the question of population size, and its bearing upon the suitability of the Northwest Territories (or, if the Territories are divided, of Denendeh and Nunavut) as province-like jurisdictions. I do not agree entirely with Dr. Bone that the relatively small size of the population of the Northwest Territories is decisive in ruling out the establishment of such jurisdictions. There are three reasons.

(1) It is true that the population of the Northwest Territories is smaller than that of any existing province, and that a larger population would be more likely to be seen as a suitable unit for provincial jurisdiction. However, when the range of population size among existing provinces is considered, the difference between the size of the Northwest Territories (with less than 60,000 people) and of Prince Edward Island (with 120,000) is less striking. The population of the largest province, Ontario, is over 8,000,000. The spread between the largest and smallest provinces of Canada in terms of population (and, for that matter, Gross Provincial Product and other measures) is already considerable, in magnitudes which exceed the differences between the territories as they are today and existing provinces. Yet in various ways, national political and fiscal arrangements have been adjusted to take into account the differences. The Canadian federal system is able to handle wide disparities of population size and provincial income. It is organized that way.

That is a practical point. The other two which I am going to raise are points of principle, intended to suggest that the question of the extension of some degree of province-like jurisdiction to the Northwest Territories is more than a question of relative size.

(2) As I understand native claims, and the various programs proposed by native groups for regional self-government, these are based upon the right to political self-determination which has come to be recognized in the twentieth century as the right of a self-defined national collectivity. In accord with this principle, there is no minimum size requirement for a nation's admissibility to the United Nations - there are members ranging in size from a population of 100,000 to populations of hundreds of millions. The operative principle is the existence of a collectivity with a self-recognized national interest. An alternative is the submersion of such a collectivity within a larger one, and this has been worked out in different states with differing degrees of success. In Canada we have considerable experience with this second type of arrangement. Now, Canadian northern native people are not working towards independent statehood, but instead for structures within Confederation which recognize their collective interests, which, they argue, are different from the whole. This is not at variance with the principles which our country has accepted in practice domestically and in principle internationally.

(3) In our federal system, one justification for the existence of a province is the existence of a regional economic interest. That is, in accepted Canadian constitutional practice, one important function of provincial governments is the management of aspects of the regional economy and the negotiation of the regional interest with other provinces and with the federal government. Such a claim to the right to administer and defend the regional economic interest formed the major thrust of the arguments made by the new provinces of Alberta and Saskatchewan for the devolution of to the provincial governments of control over natural resources administration. And that the system actually works this way is clear from the recent economic policy discussions occurring between the federal Minister of Finance and provincial representatives.

That the North is at least potentially an economic unit of province-like character has been recognized by the federal government for at least thirty years. The first government statement of this view occurs in a major study, Canada's New Northwest, released in 1947, and it is explicitly adopted in the 1966 mandate of the Department of Indian Affairs and Northern Development to administer Canada north of 60° "like a province". There has been an implicit recognition that even the tax base for province-like administration is at least potentially there; it was the prospect of revenue-producing resource development which lead the federal government to establish a province-like administrative apparatus for the region. As I understand the statements of the government of the Northwest Territories, its goals are the devolution of province-like administrative responsibilities to the regional level, bringing northern administration into line with practices in the rest of the country.

None of these points go to the heart of the issue, which concerns the precise nature of the political arrangements for regional government in the North - what form the government should take and how it should fit into Confederation. For example, there are arguments to be made in favour of a special national interest in the North, hinging upon the central importance of northern energy reserves to the national economy, and possibly, upon the unique sensitivity and international importance of the Arctic environment. But the points raised do suggest that province-like government for the North would not be outlandish in the Canadian experience: the population is not wildly out of line with the current spread in provincial sizes, there is a particular cultural context which makes some local control reasonable, if we accept that cultures (or 'nations') have a self-evident right to persist, and there is now a regional economic interest and potentially a sufficient regional tax base. What arrangement will eventually be established is far from clear. I suspect it will be worked out, as many important political arrangements are in our country, in negotiations between the federal government and the representatives of the region. In Canada, that's politics.

There are many points at which population information will be important to both the politics and the study of politics in the North. If a settlement of land claims occurs along the lines of the COPE[1] and James Bay pattern, there must be some sorting out of the question of who is entitled to benefits, and some kind of registration of the individuals who will benefit. If division of the Territories along the treeline is decided upon, following roughly the boundary envisioned by the Nunavut proposal, some projections indicate that this would produce a situation in the western Arctic in which the native majority would disappear. This projection is probably the origin of the ten-year residency rule mentioned in connection with Denendeh, a measure which is controversial in Canadian practice. It would be useful to know with some certainty under which conditions and with what likelihood the loss of a natural native majority would actually occur. In general, as long as ethnicity remains a reasonable predictor of voting behavior, projections of the future ethnic distribution of the region will be important to predicting the shape of politics in the Territories. Finally, under the present and under whatever future governmental arrangements are established in the Territories, there will be a need for demographic information associated with the planning for, provision of, and evaluation of services to the people living there.

In short, demographers and political scientists will continue to have a great deal to discuss.

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(1) Committee for Original People's Entitlement.

APPENDIX

NORTHERN POLITICAL STUDIES PROGRAM

The Northern Political Studies Program (NPSP), a cooperative enterprise of the Arctic Institute of North America and the Department of Political Science at the University of Calgary, is designed to promote a greater knowledge and understanding of political developments in Canada's North and in other Arctic regions. The development of this newly established program is being assisted by a major grant from the Donner Canadian Foundation, a private philanthropic organization.

The Northern Political Studies Program will include three basic categories of activities: teaching, research and communications. Teaching activities will take the form of courses offered in the Department of Political Science at the University of Calgary. These include a research seminar on Politics of the North being offered beginning in the winter session of 1980/81 and an introductory level lecture course on Politics of the North which will be offered beginning in the 1981/82 academic year.

The research activities will take the form of research projects sponsored by the Program and in most instances the principal researcher will be a faculty member of the University of Calgary. Research activities will reflect the fact that "Northern Politics" has regional, national and international dimensions. Some of the research projects to be sponsored by the Program have already been identified. These include: an analysis of the changing strategic significance of the arctic region in general and the Canadian arctic region in particular; a long-term study on constitutional development; studies in the evolution of native Canadian political thought as it pertains particularly to native groups in the North; an analysis of northern-tier NATO member-states' attitudes towards the significance of the arctic; an analysis of the concept of aboriginal rights and the evolution of the ideology surrounding the concept of aboriginal rights; and a study of Canadian foreign policy as it relates to the circumpolar region.

The Program does have funds for research projects in addition to those which have just been listed and we would like to encourage interested individuals and groups to make suggestions for research topics which they believe should have a priority in terms of sponsorship by the Program.

Communications activities will include publication of studies sponsored by the Program, a new annual reference publication and a number of short seminars and workshops which would occur throughout the academic year. The new annual review will discuss political issues affecting the North, policy decisions, organizational changes, and will include a bibliography of related documents, papers and other data sources. We are also planning a circumpolar section in the publication with a contributing editor from each arctic littoral state writing a short description, assessment and bibliography on political developments affecting their own northern region. The purpose of this annual review is to provide useful information to a wide variety of individuals and organizations interested or concerned with political developments in the North. The Program Director will be pleased to receive any suggestions with regard to particular types of content materials for the annual review.

The topics for seminars and workshops will be chosen primarily with current research projects in mind. Although it is foreseen that most seminars and workshops will occur in Calgary and the University of Calgary, some workshops and seminars may be held in the North.

All three categories of activities will include the participation of academics, northern residents, representatives of various levels of government, the business community and other interested individuals, institutions and groups. The NPSP Program Goals, listed below, form the central policy of the Northern Political Studies Program and clearly set the context of the Program.

The Program is an exciting and ambitious nationwide project. To attain its potential in terms of its broad impact and the significance of its contribution to many of the issues concerning the North, the Program must develop and sustain a wide network of contacts. Such contacts would include various individuals, groups and organizations who are concerned with the North whether they are in northern or southern Canada. In this regard, we request that this information be forwarded to individuals or organizations who might have an interest in the Program.

Program Goals

The activities of the Northern Political Studies Program will be guided by two general goals. The first is to build a fund of knowledge, expertise and ideas relevant to the problems of political development in the North and make that fund available to academics, northern residents, governments, and other interested individuals and institutions. The second is to train and otherwise encourage the formation of a cadre of well-educated professionals (academic and non-academic) who will continue

to study northern problems and work on solutions within the context of the Canadian North itself, as well as the wider contexts of Canada and the international political world.

The achievement of these goals will be governed by the following set of guiding principles:

(a) The political studies orientation of the Program will take clear precedence in establishing priorities for Program activities and, where appropriate, interdisciplinary support to political studies will be encouraged.

(b) Given the currency and sensitivity of many of the issues of political development concerning the North, all Program activities must meet the highest standards of scholarly excellence, rigour and impartiality.

(c) In addition to actually performing the role of "honest broker", the Program's activities must be perceived as such by the various interested sections of northern and southern Canadian society.

(d) To the extent that the criteria of "relevance" and "responding to issues of national concern" do not detract from the above standards, Program planning and activities will take these two further criteria into account.

(e) To promote a more informed basis for knowledge, analysis and discussion, Program activities will emphasize the inclusion and involvement of northerners as students, lecturers, visiting experts, consultants and general participants.

(f) In achieving the general goals of the Program and following the guiding principles as stated above, Program planning will retain the degree of flexibility sufficient to allow for gradual growth in response to the development of greater expertise within the Program, as well as to interests enunciated by other relevant sources of expertise, concern and opinion.

"An analytical review of population projections for the northern territories"

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1. Introduction

Before giving you our observations on population projections for the northern territories, we might put into some kind of perspective our interest in the subject.

The Federal government has a general responsibility for the socio-economic development of the two territories with particular attention to be given to the national interest in the region's mineral and hydrocarbon wealth and to the particular circumstances of the native people. There are two possible approaches to take in exercising this responsibility.

The first is a "laissez-faire" approach in the hope that individuals, acting in what they perceive as their own best interests, will produce some outcome that is best for the social order as a whole. However, there is ample proof to suggest that, in the North, some thought must be given to what constitutes a desirable socio-economic outcome and that the government must intervene to some extent to ensure its realization. The existence of planning groups within both levels of government is evidence for the acceptance of this approach and, since one of the purposes of economic planning is the improvement of human welfare, there is an obvious requirement for a wide range of demographic information in order to plan effectively.

2. Population History - General

Given this requirement, one of the problems is to find a model which provides some insight into the factors determining future population size and its characteristics.

We assume that, for large population groupings, the significant factors affecting their size are the birth rate, the death rate and the age structure of the population, in particular the number of females of child-bearing age. However, as smaller population groupings are examined, it appears that a greater emphasis must be attached to migratory movements, with these movements being determined largely by economic events. For very small population groupings, such as those found in the northern territories, we should expect to find the influence of economic events of such weight that any long-range population projections - say, for ten years or more - are extremely conjectural and of limited reliability.

Some evidence for this concept is provided by comparing, for the period from 1871 to 1976, the growth of the Canadian population with the growth of the populations of the geographic areas now comprising Alberta and Saskatchewan and the Northwest Territories and Yukon. Table 1 provides the statistics for this comparison and Figure 1 sets the data out on semi-logarithmic paper to show changes in the rate of growth.(1) The shaded areas in the figure identify the population born outside the particular jurisdiction.

As can be seen in the case of the Canadian population, the larger the population size, the less the fluctuations in the growth rate by reason of the dampening effect of a large base to a relatively small change in numbers. In contrast, the experience of the two prairie provinces and of the two northern territories provides some evidence for the impact of migratory activity on the rate of growth of population size.

The rapid growth in the population of Alberta and Saskatchewan between 1901 and 1911 came from migration into the region caused, ultimately, by the upward movement in the price of cereals starting in the late 1890s.(2) This movement in prices coincided with the rationalization of agriculture in central and eastern Europe and many of the displaced peasantry sought land in western Canada which, with the closing of the American frontier, was the last source of cheap homesteads. The rapid increase in the population of the northern territories was caused by the discovery of gold deposits in the Yukon which could be worked by placer mining.(3) Both of these sets of events generated labour intensive economic activity and the consequence was a rapid increase in population. Once the initial impetus had run its course, growth rates moderated significantly or, in the case of the northern territories until 1921, took on a negative value.

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(1) The Opening of the Canadian North, 1870-1914, Statistics Canada, Decennial and quinquennial censuses, 1971 to 1976; Zaslow, M., McClelland & Stewart, Toronto, 1971.

(2) Prices, Warren, G.F. & Pearson, F.A., John Wiley & Sons Ltd., N.Y., 1933.

(3) Op. cit., Zaslow.

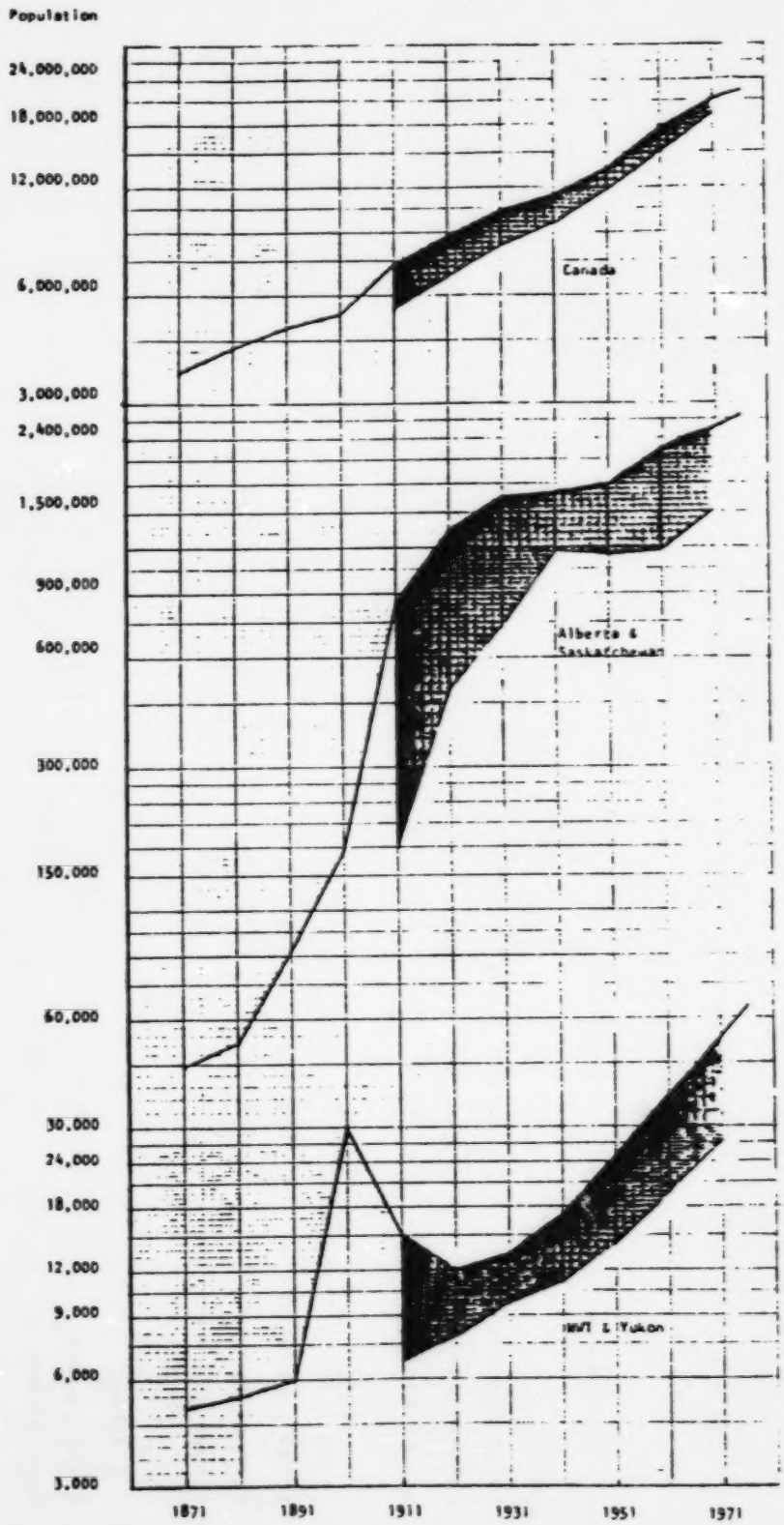
Table I - POPULATION TRENDS: Canada, Alberta & Saskatchewan, NWT & Yukon, 1911 - 1971

	1911	1921	1931	1941	1951	1961	1971
A. Canada:							
total population	7,206,643	8,788,483	10,376,786	11,506,655	13,648,013	17,776,663	21,046,205
born elsewhere	1,586,961	1,955,736	2,307,525	2,018,847	1,698,495	2,392,679	2,773,425
% born elsewhere	*22.0*	*22.3*	*22.2*	*17.6*	*12.4*	*13.5*	*13.2*
B. Alberta & Saskatchewan:							
total population	866,727	1,345,964	1,653,390	1,692,161	1,771,229	2,257,125	2,443,490
born elsewhere	688,777	853,359	886,540	510,184	624,174	804,271	565,135
% born elsewhere	*79.5*	*63.4*	*53.6*	*30.2*	*35.2*	*35.6*	*23.1*
C. NWT & Yukon:							
total population	15,019	12,145	13,953	16,942	25,100	37,626	53,195
born elsewhere	8,036	4,185	4,195	5,676	10,916	17,633	25,640
% born elsewhere	*53.5*	*34.5*	*30.1*	*33.5*	*43.5*	*52.2*	*48.7*

Sources: Statistics Canada, Decennial Censuses

Note: Newfoundland excluded from figures for Canadian population

Fig. 1 - POPULATION TRENDS: Canada, Alberta and Saskatchewan, NWT and Yukon, 1871 - 1976



3. Territorial Population : 1941 - 1976

The experience of the two northern territories does not exactly fit the circumstances just described. Instead of population reaching a plateau, since 1941, there has been both a rapid and consistent rate of growth in population size. We attribute this to a situation where there are two distinctive ethnic groups with the demography of each being influenced by different factors.

The native people have always composed a significant portion of the total territorial population and the rapid increase in their numbers has been attributed to the substantial investment by the Federal government since World War 2 in health facilities and other social services.(4) This investment has significantly lowered the rate of infant mortality and, as more native women reach child-bearing age - primarily 15 to 44 years of age - the potential for accelerated population growth is strengthened.

Tables 2(a) and 2(b) provide data on the growth in this population component. The potential for growth can be appreciated by examining the 15 to 19 and the 35 to 44 age groups. Ignoring the insignificant number of deaths among these age groups, the loss of the reproductive power of the 950 women in the older age group by 1981 will be more than offset by the addition of the 3,250 women who have reached child-bearing age during the 1970s. Therefore, though the birth rate among native women has fallen substantially in recent years - from about 276 to 217 births for each thousand women in the 15 to 44 age group, between 1961 and 1969 in the Northwest Territories - this trend by itself will not be sufficient to lower the rapid rate of growth among the native people for another twenty years.(5)

For the non-native population, migratory activity has been the most important factor in determining the size of this ethnic group. Sections B and C of Table 3 indicate its magnitude.

In 1941, nearly 80% of the non-natives resident in the territories were born elsewhere. Thirty years later, still more than 75% of this population component came from outside the territories. Furthermore, as indicated in section D, many persons born in the territories eventually migrate from the region. It is probable that most are non-natives born in the territories to parents who had migrated there and subsequently left.

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(4) Annual Report, 1954-1955, _____"Human Problems in the Canadian North", Department of Northern Affairs & National Resources, Ottawa, 1955.

(5) Population Projections of the Northwest Territories to 1981: Chang-Mei Lu and D.C. Emerson Mathurin, Department of Indian Affairs and Northern Development, November 1973.

Table 2(a) - NORTHERN TERRITORIES: Native Women by Age Group
1931 - 1971

Age	1931	1941	1951	1961	1971
65 +	147	195	224	298	360
45 - 64	599	669	705	767	960
35 - 44	560	565	600	669	950
20 - 34	1,114	1,216	1,318	1,680	2,100
15 - 19	542	532	642	716	1,030
5 - 14	1,406	1,392	1,518	2,069	3,250
0 - 4	717	824	1,046	1,437	1,850
	5,085	5,393	6,053	7,636	10,500

Source: Statistics Canada, Decennial Censuses

Notes: 1941 does not include "metis" women; 1971 figures randomly rounded to nearest multiple of 5.

Table 2(b) - NORTHERN TERRITORIES: Percentage Rate of Growth of Native Women by Age Group

Age	1931-1941	1941-1951	1951-1961	1961-1971
65+	32.7	14.9	33.0	20.8
45 - 64	11.7	5.4	8.8	25.2
35 - 44	.9	6.2	11.5	42.0
20 - 34	9.2	8.4	27.5	25.0
15 - 19	-1.8	20.7	11.5	43.9
5 - 14	-1.0	9.1	36.3	57.1
0 - 4	14.9	26.9	37.4	28.7
	6.1	12.2	26.2	37.5

Table 3 - NORTHERN TERRITORIES: Total Population by Ethnicity and Birthplace

	1931	1941	1951	1961	1971
A. Total population:					
non-native	3,609	5,978	12,777	22,175	32,030
native	10,344	10,964	12,223	15,450	21,165
	13,953	16,942	25,100	37,625	53,195
B. Born in territories and living there					
non-native	427	1,214	2,988	5,841	8,155
native	9,331	10,047	11,196	14,152	19,400
	9,758	11,261	14,184	19,993	27,555
C. Living in territories but born elsewhere					
non-native	3,182	4,764	9,789	16,334	24,145
native	1,013	917	1,027	1,298	1,495
	4,195	5,681	10,816	17,632	25,640
D. Born in territories but living elsewhere					
non-native	407	847	n.a.	n.a.	n.a.
native	287	159	n.a.	n.a.	n.a.
	694	1,006	2,470	6,035	15,020

Sources: Statistics Canada, Decennial censuses

n.a. - not available

This turnover of the non-native population still continues. The 1976 census reveals that 13,700 residents of the territories in 1971 left during the subsequent five years. This was about 26% of the total territorial populations recorded in 1971. The rate of turnover is even more revealing if our attention is confined only to those residents who were not born in the territories. In this case, we estimate that slightly more than 45% of the 1971 migrant residents left the region during the next five years.(6) Moreover, this calculation does not include those persons who came to the territories after the 1971 census, lived there long enough to be considered as residents, but left before the 1976 census.

4. Review of Projection Studies

In the past years, there have been at least eight different studies on territorial population which have used varying assumptions about fertility, mortality and migration. However, in this paper, we intend to confine ourselves to three long-range population projections, one made by Statistics Canada and the other two by each of the territorial governments. We will then examine projections made within the Department of Indian Affairs and Northern Development for each of the territories and compare them with subsequent experience in order to get some idea as to the reliability of the projections.

A. Population Projections for Canada and the Provinces,(7) 1976-2001

This study was published by Statistics Canada in 1979 and appears to be an update of projections(8) made seven years earlier, based upon 1971 census data. The methodology used was to develop estimates of fertility, mortality and migratory activity at the provincial level and apply these estimates to 1976 census data. A set of seven projections for each province and territory is provided with an aggregation done for the national projections. Figure 2 shows the high and low projections for each of the territories for both series.

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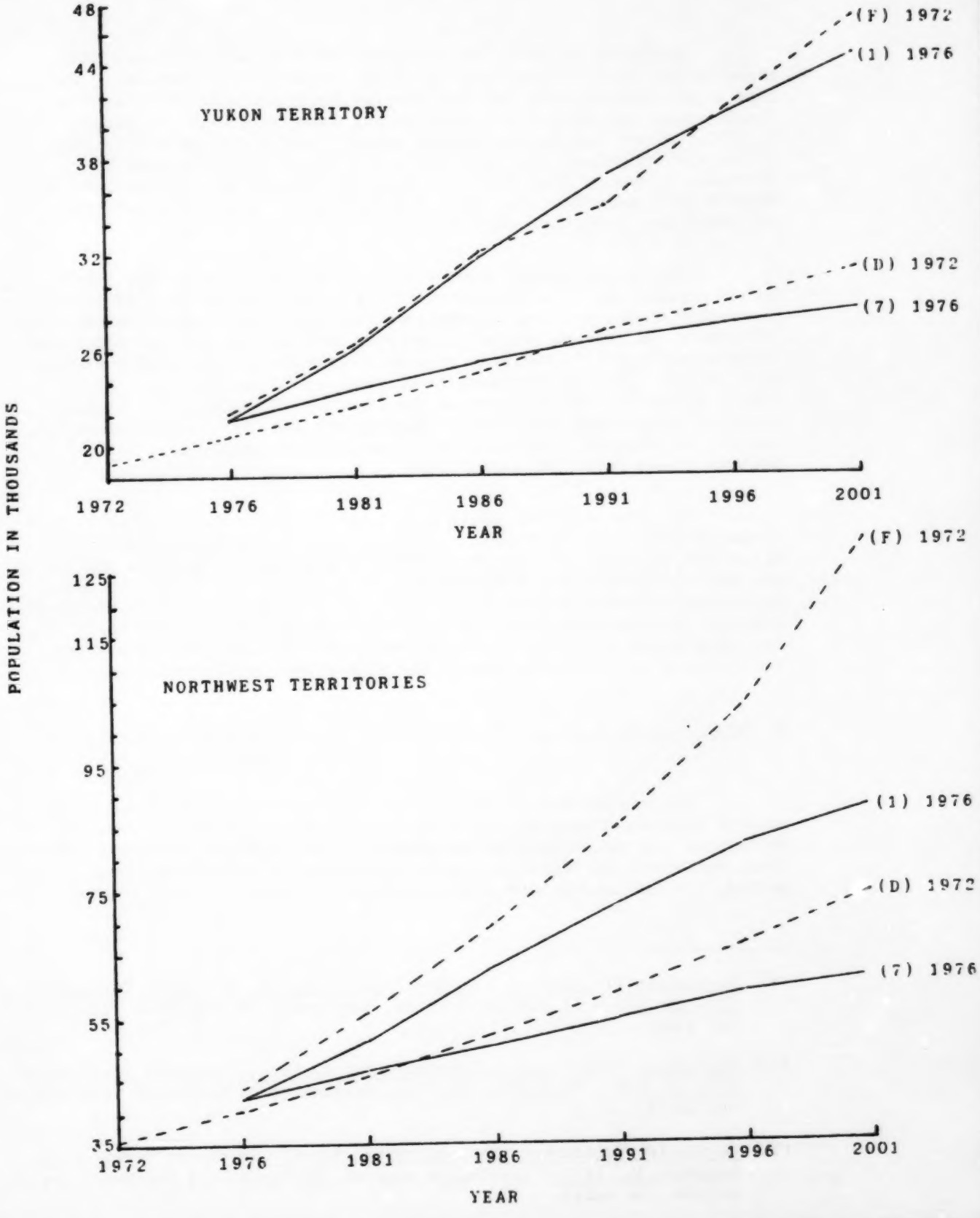
(6) The calculation was made by assuming that 2,000 of the migrants from the territories during the period 1971 to 1976 were born there and comparing the residual migratory group with the number of territorial residents in the 1971 census who were born outside the territories.

(7) Population Projections for Canada and the Provinces 1976-2001 : Statistics Canada, Catalogue Number 91-520, February 1979.

(8) Population Projections for Canada and the Provinces 1972-2001 : Statistics Canada, Catalogue Number 91-514, June 1974.

FIGURE 2. STATISTICS CANADA PROJECTIONS



Fertility rates in the Northwest Territories are higher than those in the Yukon as a reflection of the larger native component, in that area. However, the rate for the two territories is still substantially above the rate of 1.7 children per woman projected for Canada by 1991. After considering disease specific mortality rates relative to the age structure, the expectation of life at birth has been increased by nearly five years for both territories and for both sexes between 1971 and 1986. The rates are expected to remain constant for the remainder of the forecast period.

Statistics Canada assumes a negligible increase in the territorial populations from international migration. In the area of interprovincial migration, four assumptions have been considered. Assumption "A" treats the average proportion between in-migration and out-migration experienced from 1975 to 1978, to remain constant for the entire projection period. This is the least favourable assumption for both territories. Assumption "B" is based on the traditional pattern of migratory activity experienced since 1960. This is the most favourable assumption for the territories. Assumptions "C" and "D" are essentially manipulations of the first two assumptions.

At this point, we would only question, from the point of view of methodology, the applicability of fertility and mortality rates based upon an old study for 1951-1969, for another thirty years and the use of assumptions concerning migration which could easily be upset by any major change in economic activity in the two territories. Moreover, the lack of micro-demographic details such as the ethnic composition of the population, its distribution by settlement and the like, minimizes the value of these projections to the planner and policy-maker.

B. Population Projections, Methodological Report, Northwest Territories[9] 1978 - 1988 (cf. figure 3)

The projections in this report appear to have been based on an earlier work undertaken by the Government of the Northwest Territories[10] which used its own population estimates[11] for 1978 and developed fertility, mortality and migration rates, employing the cohort component method, for the appropriate sub-population at sequential life stages.

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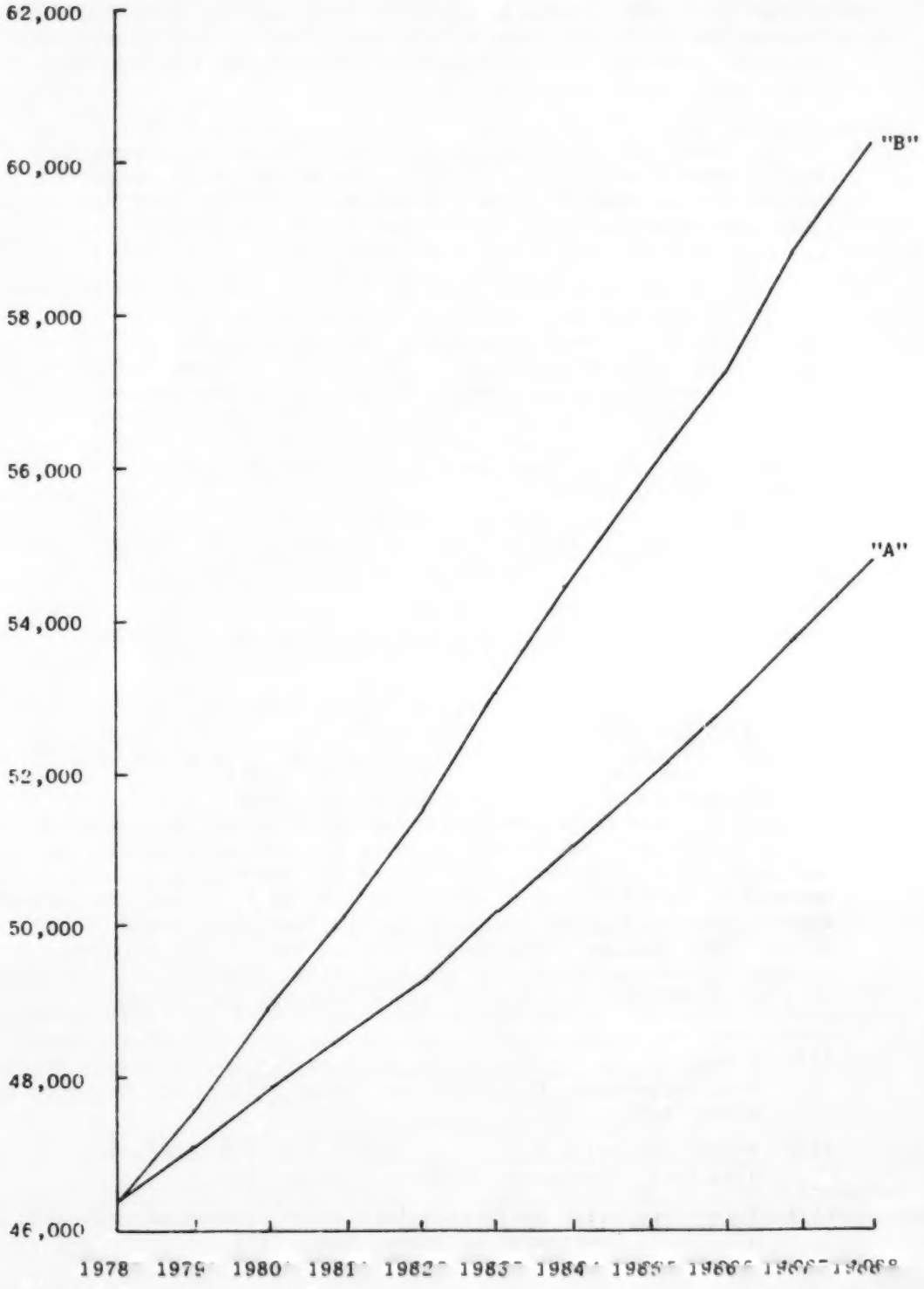
(9) Population Projections : Methodological Report, Northwest Territories, 1978 to 1988 : Statistics Section, Government of Northwest Territories, (no date).

(10) Population Projections : Community Tabulations, Northwest Territories, 1978 to 1988 : Statistics Section, Government of Northwest Territories, (no date).

(11) Population Estimates: Methodological Report, Northwest Territories, December 31, 1978 : Statistics Section, Government of Northwest Territories. (no date).

FIGURE 3: GOVERNMENT OF NORTHWEST TERRITORIES PROJECTIONS



Estimates of birth were derived from family allowance records and deaths from territorial vital statistics. In the case of migration, two scenarios were considered. For projection "A", the rate of net-migration is assumed to be zero while for projection "B", a net in-migration of 555 persons is assumed, based on historical experience between 1971 and 1978. For both projections, fertility and mortality rates are presumed to be constant at 1978 level. Figure 3 sets out these projections.

Although various sources of information have been identified, we feel that a suitable synchronization of the philosophies, assumptions and the limitations of these sources appears to be incomplete giving rise to some anomalies in the resulting projections.

To cite one example, table 6.2.3 of the publication under reference provides age - region breakdown for projections "A". The population for the age group 0 to 4 for the years 1978, 1983 and 1988 is given as 5560, 5585 and 6491 respectively. It means that the net addition to this age group would be only 25 during the period 1978 to 1983 while it would be 906 during the immediately following five year period. Since net in-migration is assumed to be zero - though it is possible that the movement in and out of the territory may differ in terms of the age of the migrants - and since the fertility rates are held constant and the number of women in the age group 15 to 44 years of age is about the same for each five year period, these figures seem to be doubtful.(12)

C. Yukon Population Projection, 1980 - 1995(13)

This report was published by the Government of the Yukon in 1980 as an update of its earlier report.(14) In our opinion, the report is quite interesting because of its novel socio-economic model.

The growth in the native component of the population is based on the traditional cohort method using age and sex specific fertility and death rates. However, the size of the non-native population is assumed to be a function of in-migrant labour force and its dependents whose number is directly related to changes in employment in each sector of the Yukon economy. The family size of the in-migrant workers is assumed to remain constant at the historical average of 2.1 per family, so also is the age structure of the non-native population.

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(12) A note on the Population Projections for the Northwest Territories: D.G. Saigaonkar, Department of Indian Affairs and Northern Development, April 1981.

(13) Yukon Population Projection 1980 - 1995 : Economic Research and Planning Unit, Government of Yukon, January 1980.

(14) Yukon Population Projection 1979 - 1990 : Economic Research and Planning Unit, Government of Yukon, March 1979.

The three projections are derived from the effect of different growth rates in the four major components of the economy, viz., mining, tourism and the federal and territorial governments, and allowances are made for such contingencies as the construction of an aluminum smelter, the Alcan natural gas pipeline and the like. These different growth rates are the driving factors of the model and their values are shown in Figure 4, along with resultant projections.

We have some doubt about the ability of these key sectors to gear population growth to changes in the gross values of the outputs, given the rate of inflation now persisting in the economy. Nevertheless, we believe that the model, with refinements to permit more accurate estimation of the demographic characteristics of the migratory population, is the most appropriate one within the context of population projections for the territories.

We now wish to examine two population studies made a few years ago in the Department of Indian Affairs and Northern Development, in order to determine their confirmation with experience.

D. Population Projections of the Northwest Territories to 1981(5)

This report, by Mathurin and Lu, was published in 1973 and employed the standard cohort component method with three levels of fertility and migration rates ("low", "medium" and "high") and four levels of mortality rates ("constant", "low", "medium" and "high") for the population broken down by sex, ethnic origin and five-year age group.

The projections indicated that the 1976 populations would be within the range of 42,711 to 43,208 persons. The 1976 census estimate of 42,610 is slightly outside this range. We are reasonably confident that the 1981 census will reveal a total population towards the lower range of the figures of 49,425 - 50,298 projected for that year by the authors.

E. Population Projections of the Yukon Territory to 1981(15)

This report, by Mrs. C.M. Lu, was published in 1975 and used essentially the same methodology as she and Mr. Mathurin employed in their projections for the Northwest Territories.

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(5) Op. cit., Mathurin and Lu.

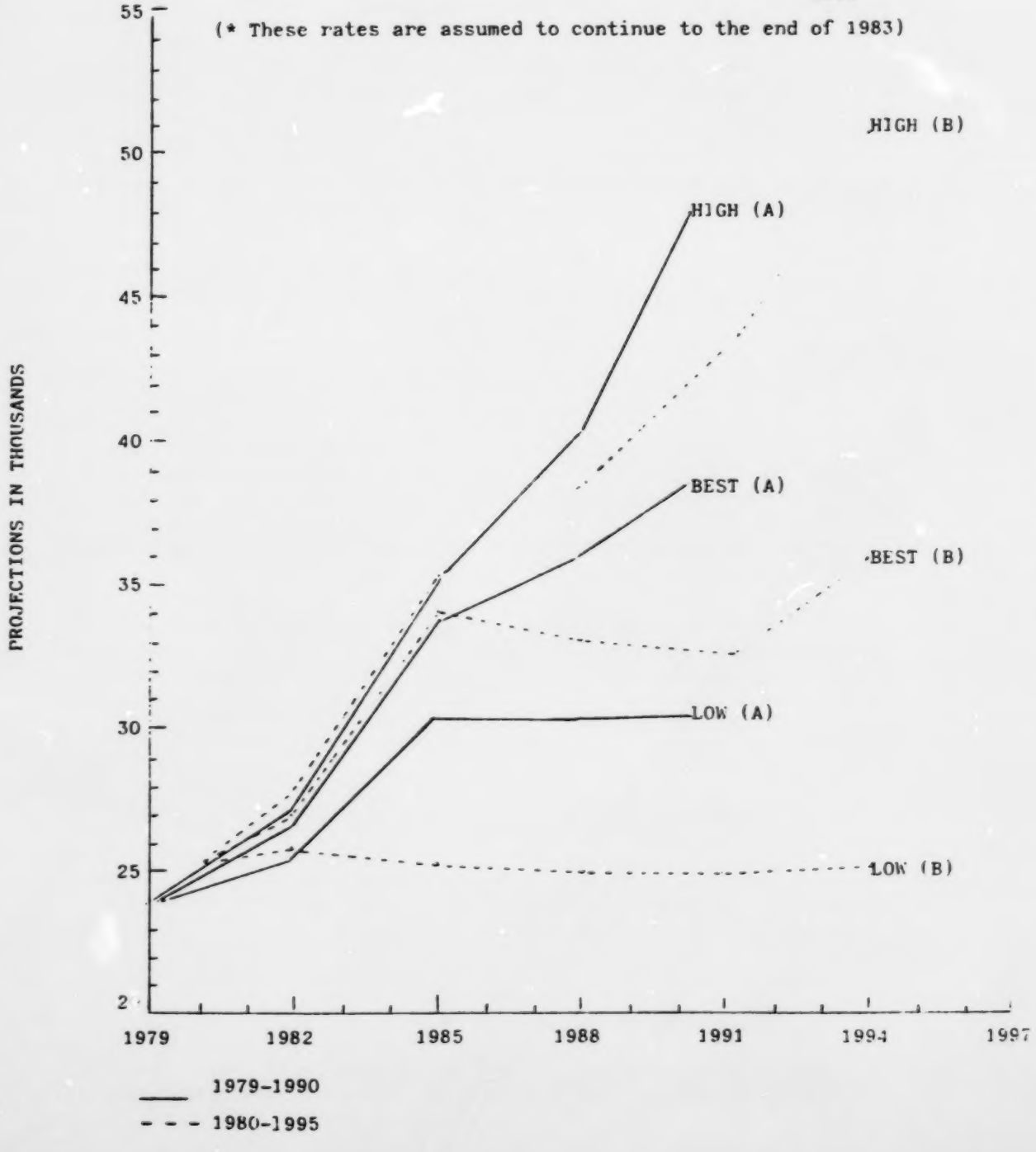
(15) Population Projections of the Yukon Territory to 1981 : Chang-Mei Lu, Department of Indian Affairs and Northern Development, May 1975.

FIGURE 4. GOVERNMENT OF YUKON PROJECTIONS

PERCENTAGE GROWTH RATES OF ECONOMIC FACTORS

	1979-1990			1980-1995		
	LOW	BEST	HIGH	LOW	BEST	HIGH
Mining Exports	10.0	14.5	32.5	10.0	14.5	14.5
Tourism Exports	10.0	15.8	17.2	10.0	15.8* 10.0	15.8
Federal Expenditure	4.9	12.5	19.0	10.0	10.0	12.5
Territorial Expenditure	15.0	17.6	21.0	10.0	17.6* 10.0	17.6

(* These rates are assumed to continue to the end of 1983)



According to these projections, the Yukon population should have ranged from 21,514 to 23,090 persons in 1976 and from 24,612 to 27,928 persons in 1981. The 1976 census figure of 21,835 lies towards the lower side of the range for that year and we would expect that the 1981 census figure would also be close to the lower end of the range for the 1981 projection.

5. Statistical Measurement of Population Projections:

Shyrock Siegel and Associates(16) as well as Gnanasekaran(17) have described a number of methods for projecting population. The ratio method based upon study of existing trends is usually simple and suitable for large size population. The cohort survival component method is reckoned as a sophisticated method but for projecting small size populations like in the territories, where migration plays a significant role (nearly 36% of the population born in the territories was residing elsewhere while 48.7% of the population of the territories was born elsewhere, according to 1971 census, table 3), the need to use econometric model and accommodate socio-economic variables requires emphasis. Another aspect to be considered, is the calculation and application of fertility, mortality and migration rates based upon very small numbers arrived at by age-sex and ethnicity specifications. Although a clearcut line of demarkation cannot be established below which percentages become meaningless, the inapplicability of and the confusion created by employing rates obtained from small numbers is obvious. Random fluctuations which are conveniently concealed in large numbers, stand out glaringly in such cases.

Some idea about the validity of a particular projection series can be obtained if one considers quinquennial survival rates over five year period. For example, the projected population in the age-group 5-9 can be compared with the population in the age-group 0-4, five years ago. If we assume a minimal mortality in these age-groups, the change in the population would mainly be attributable to net-migration. Consequently, a comparison of survival rates for different projection series applying same methodology for projections, would indicate the extent of variation amongst net-migration assumptions underlying these series.

Table 4 gives such survival rates for projection series in respect of the Northwest Territories while table 5 provides similar survival rates for the Yukon Territories. The percentage change in the total projected population over the quinquennial periods and the average annual compound rate of change are also provided for comparison.

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(16) Methods and Materials of Demography : Henry S. Shyrock, Jacob S. Siegel and Associates, U.S. Government Printing Office, Washington, D.C., 1971.

(17) Data Base and Methodological Problems in preparing small Area Population Projections : K.S. Gnanasekaran, Statistics Canada, March 1976.

TABLE 4: COHORT SURVIVAL RATES OF POPULATION PROJECTIONS BY SOURCES

NORTHWEST TERRITORIES

AGE GROUP	STATISTICS CANADA		GOVERNMENT OF NORTHWEST TERRITORIES				LU - MATHURIN		HAMELIN [19]		JOHN REID	
	1978 - 1983 [1]	1983 - 1988 [1]	1978 - 1983 [2]	1983 - 1988 [2]	1978 - 1983 [3]	1983 - 1988 [3]	1971 - 1976 [4]	1976 - 1981 [4]	1976 - 1981 [5]	1981 - 1985 [5]	1977-1981	1981-1986
5-9/0-4	98.1	100.0	101.2	101.1	105.1	104.4	102.3	101.9	102.9	100.4	113.1	129.8
10-14/5-9	96.4	100.0	92.4	92.4	94.8	93.6	103.4	103.1	97.5	101.1	106.4	105.4
15-19/10-14	101.9	100.0	103.7	103.8	108.6	111.0	103.3	102.5	98.0	98.8	101.4	105.7
20-24/15-19	108.3	100.0	124.4	122.0	138.3	140.6	109.8	106.6	109.6	103.0	108.4	115.9
25-29/20-24	120.9	113.5	101.1	100.6	111.4	105.0	114.7	111.9	111.6	103.4	114.4	116.5
30-34/25-29	113.0	115.4	81.4	81.2	87.0	84.0	108.8	107.8	103.0	101.6	109.7	116.6
35-39/30-34	110.5	103.8	86.4	87.8	90.6	89.2	105.9	104.8	100.7	99.6	103.4	100.2
40-44/35-39	107.1	102.4	87.5	88.8	91.3	90.9	103.5	102.7	100.4	96.8	102.0	101.6
45-49/40-44	109.1	103.3	92.9	92.9	96.2	95.4	102.5	101.7	102.0	96.3	100.5	103.9
50-54/45-49	105.3	100.0	89.5	90.8	92.4	92.2	101.2	100.5	101.2	96.1	101.2	101.9
55-59/50-54	100.0	100.0	85.2	86.1	87.3	87.0	98.3	97.9	98.7	94.4	100.3	102.0
60-64/55-59	100.0	100.0	84.1	85.2	85.3	85.3	95.7	95.7	97.9	92.9	89.7	90.5
65-69/60-64	87.5	100.0	-	-	-	-	92.9	93.4	95.4	91.2	96.3	98.8
70+/65-69	180.0	185.7	216.5	228.5	219.2	229,3	189.6	200.9	188.9	216.5	156.8	161.7
TOTAL % INCREASE	17.5	14.1	8.3	9.1	14.2	13.8	19.3	16.6	16.8	13.8	19.2	21.4
AVERAGE ANNUAL % INCREASE (COMPOUND)	3.28	2.68	1.62	1.77	2.70	2.62	3.59	3.12	3.15	3.28	4.49	3.95

1. STATISTICS CANADA, SERIES 3
2. GOV'T OF THE N.W.T. PROJECTIONS "A"
3. " " " " " "B"
4. LU & MATHURIN, SERIES "C"
5. HAMELIN, PROJECTIONS "A"

TABLE 5: COHORT SURVIVAL RATES OF POPULATION PROJECTIONS BY SOURCES

YUKON

AGE GROUP	STATISTICS CANADA [1]		CHANG-MEI LU [2]		GOVERNMENT OF YUKON TERRITORY (1980 - 1995)					
	1978-1983	1983-1988	1971-1976	1976-1981	1980-1985 [3]	1985-1990 [3]	1980-1985 [4]	1985-1990 [4]	1980-1985 [5]	1985-1990 [5]
5-9/0-4	109.1	103.9	105.5	104.6	111.6	92.3	137.8	97.1	141.4	119.5
10-14/5-9	109.1	100.0	104.6	104.8	107.2	88.9	132.4	92.4	135.8	113.5
15-19/10-14	109.1	104.2	105.6	104.6	109.3	89.4	134.6	93.9	138.1	116.3
20-24/15-19	108.7	104.2	113.1	109.0	120.2	88.5	148.9	93.0	152.9	115.3
25-29/20-24	117.4	120.0	112.7	114.3	120.1	102.8	148.9	107.5	152.8	133.2
30-34/25-29	108.0	114.8	108.4	107.7	76.0	63.9	94.2	66.6	96.6	82.2
35-39/30-34	100.0	103.7	106.5	104.5	90.2	83.7	111.8	87.3	114.7	107.8
40-44/35-39	106.3	100.0	104.9	103.3	98.9	73.7	122.0	76.6	125.2	94.4
45-49/40-44	100.0	100.0	103.5	102.9	87.0	67.3	108.2	70.2	111.0	86.4
50-54/45-49	100.0	100.0	101.3	100.6	84.7	75.2	105.0	78.2	107.7	96.5
55-59/50-54	100.0	100.0	100.0	99.6	94.7	77.3	117.4	80.5	120.6	99.5
60-64/55-59	100.0	90.0	97.5	97.2	77.0	64.2	93.5	65.4	95.8	79.2
65-69/60-64	80.0	100.0	92.7	93.8	71.0	70.4	86.4	73.0	88.4	88.8
70+/65-69	200.0	175.0	187.1	186.9	124.2	112.7	151.1	116.8	155.1	142.6
TOTAL % INCREASE	17.0	13.8	18.6	15.7	10.1	-9.1	35.9	-5.2	39.4	16.7
AVERAGE ANNUAL % INCREASE (COMPOUND)	3.21	2.62	3.47	2.95	2.11	-1.76	6.32	-1.02	6.87	3.14

1. STATISTICS CANADA, SERIES 3
2. CHANG MEI LU, SERIES "C"
3. GOV'T OF YUKON, (LOW GROWTH)
4. " " " (BEST ESTIMATE)
5. " " " (HIGH GROWTH)

An analysis of survival rates in Table 4 indicates that those for age-group 5-9 seem to be around 100%, except in the case of projections developed by John Reid.(18) For the age-groups 10-14 and 30-34 to 60-64, rates for both projection series developed by the Government of the Northwest Territories, appear to be quite lower than any other series. On the other hand, survival rates developed from the same source are very high for the age-group 20-24. The percentage increases in the projected total population are as low as 8.3 for 1978-83 (Government of the Northwest Territories - Projections "A") and as high as 19.2 for 1977-81 (John Reid). The average annual compound rate of increase also varies considerably from 1.62 to 4.49 percent.

Table 5 indicates that the survival rates in respect of Yukon territories have considerable wider range for all age-groups, mainly in series developed by the Yukon Territorial Government. The percentage change in the total projected population varies from a maximum increase of nearly 40% to a decrease of nine percent.

These correspond to an average annual compound increase of 6.87 percent in the total population between 1980-1985 according to "high growth" assumptions and an average annual compound decrease of 1.76 percent in total population between 1985-1990 according to "low growth" assumptions made by the Government of Yukon.

The survival rates for an age-group for any quinquennial period should not differ considerably from those for the succeeding age-group for the next five year period, unless extensive migratory activity is present in these age-groups. A closer examination of tables 4 and 5, indicates that the rates leave considerable scope for doubt in this respect. For example, from table 5 one can observe that the survival rates for age-groups 25-29 (over 20-24) for series developed by the Government of Yukon are 120.1, 148.9 and 152.8 over the period 1980-85, which drop down suddenly to 63.9, 66.6 and 82.2 respectively over the period 1985-90, for the age-group 30-34.

Conclusion

We referred earlier to our scepticism about the possibility of developing reasonably reliable long-range population projections for the territories. A number of reasons of a technical nature have already been mentioned. Another of a more general nature will now be touched upon.

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(18) Demographic Projection and Analysis of the Population of the Northwest Territories to 1987 : John Reid, Department of Planning and Program Evaluation, Government of Northwest Territories, March 1977.

As is the case with all forecasts, it is assumed that the experience of the past, with some allowance for modifications, will hold true for the future. In the case of the projections already made, some of these modifications have already been noted, e.g., the declining fertility rates in the projections made by Statistics Canada or the adjustments to the level of economic activity that underlie the projections made by the Yukon government. In all cases, except for the "low" growth estimate of the Yukon government, the effect of the modifications is only to slow down what is anticipated to be a continual growth in population size. No allowance has been made for an event that would constitute a significant disruption to past experience. This is the possibility of an out-migration of large numbers of native people, particularly young people of the reproductive age-groups in search of job opportunities.

Both territories have economies geared to the production of minerals for export and at some future date, the production of oil and gas, also for export. In the Northwest Territories, there is also a significant amount of economic activity on the part of the native people devoted to hunting, trapping and fishing, often for personal consumption. The experience of other regions of Canada would suggest that these types of economic activity are associated with an "optimal" population size which is quite smaller than the population that can be supported by extensive manufacturing and commercial activity. The transfer of powers to the territorial governments in the late 1960s and early 1970s and the relocation of governmental staff boosted population size but we believe that this is essentially a one-time effect. We would anticipate, therefore that at some future date population size should reach a plateau or, in the case of a severe economic recession, experience a decline.

We wish to conclude this paper with this thought. It may be possible that we as researchers are on the wrong track in placing a great deal of attention on population growth <u>per se</u>. Would it not be more appropriate to give more consideration to what might be considered an "optimal" population for both territories? This would bring population studies more in alignment with the kinds of questions now being asked about the future of the North, viz., what are the resources of the territories, how are they to be exploited, does the exploitation of these resources for one purpose exclude their exploitation for another and who is to benefit?

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